SERVICE MANUAL

Service Manual Index

Advance® Series Bed From Hill-Rom®

Product No. P1104/P1105/P1115/P1135/P1145/ P1155/P1165/P1106/P1116/P1136/P1146

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Purpose

This manual provides requirements for Hill-Rom Advance Series Bed normal operation and maintenance. It also includes a parts list (in chapter 5) for ordering replacement components.

Audience

This manual is intended for use only by facility-authorized maintenance personnel. Failure to observe this restriction can result in severe injury to people and serious damage to equipment.

Organization

This service manual contains seven chapters.

Chapter 1: Introduction

In addition to a brief description of this service manual, chapter 1 also provides a product overview.

Chapter 2: Troubleshooting Procedures

Repair analysis procedures are contained in this chapter. These procedures are used to gather information, identify the maintenance needs and verify the effectiveness of the repair.

Chapter 3: Theory of Operation

This chapter describes the application of the mechanical, electrical, pneumatic, and hydraulic systems employed in this product. It also contains the hardware and software theories of operation.

Chapter 4: Removal, Replacement, and Adjustment Procedures

Chapter 4 contains the detailed maintenance procedures determined necessary in chapter 2.

Chapter 5: Parts List

This chapter contains Hill-Rom’s warranty, part-ordering procedure, and illustrated parts lists.

Chapter 6: General Procedures

Cleaning, preventive maintenance, and other general procedures are described in this chapter.

Chapter 7: Accessories

A list of additional products, that can be used in conjunction with the Hill-Rom Advance Series bed, is available in chapter 7. Installation procedures for these accessories are also included.

Typographical Conventions

This manual contains different typefaces and icons designed to improve readability and increase understanding of its content. Note the following examples:

- Standard text—used for regular information.
- **Boldface text**—emphasizes a word or phrase.
- **NOTE:**—sets apart special information or important instruction clarification.
- The symbol below highlights a WARNING or CAUTION:

Figure 1-1. Warning and Caution Symbol

  - A WARNING identifies situations or actions that may affect patient or user safety. Disregarding a warning could result in patient or user injury.
  - A CAUTION points out special procedures or precautions that personnel must follow to avoid equipment damage.
- The symbol below highlights an electrical shock hazard WARNING:

Figure 1-2. Electrical Shock Hazard Warning

Introduction

Overview

The 4-motor Advance Series Bed is the retractable type that moves the patient closer to the head end of the bed automatically when the head section is elevated. The bed is equipped with a night light that automatically illuminates an area under the bed (at both sides) when the ambient light decreases. See “Bed Positions” on page 1-8 and “Physical Description” on page 1-13 for additional information concerning some of the Advance Series Bed features.

Operating Precautions

Before operating the Advance Series Bed, ensure you have read and understand in detail the contents of this manual. It is important that you read and strictly adhere to the safety information contained in this manual.

Any reference to a side of the bed is from the patient’s view lying in the bed on his or her back.

Bed Positions

The Advance Series Bed has four sections: the head, seat, knee, and foot sections (see figure 1-3 on page 1-9). Bed positions are shown in figure 1-3 through figure 1-7.

Figure 1-3. Bed Location Description

Head Section Articulation Position

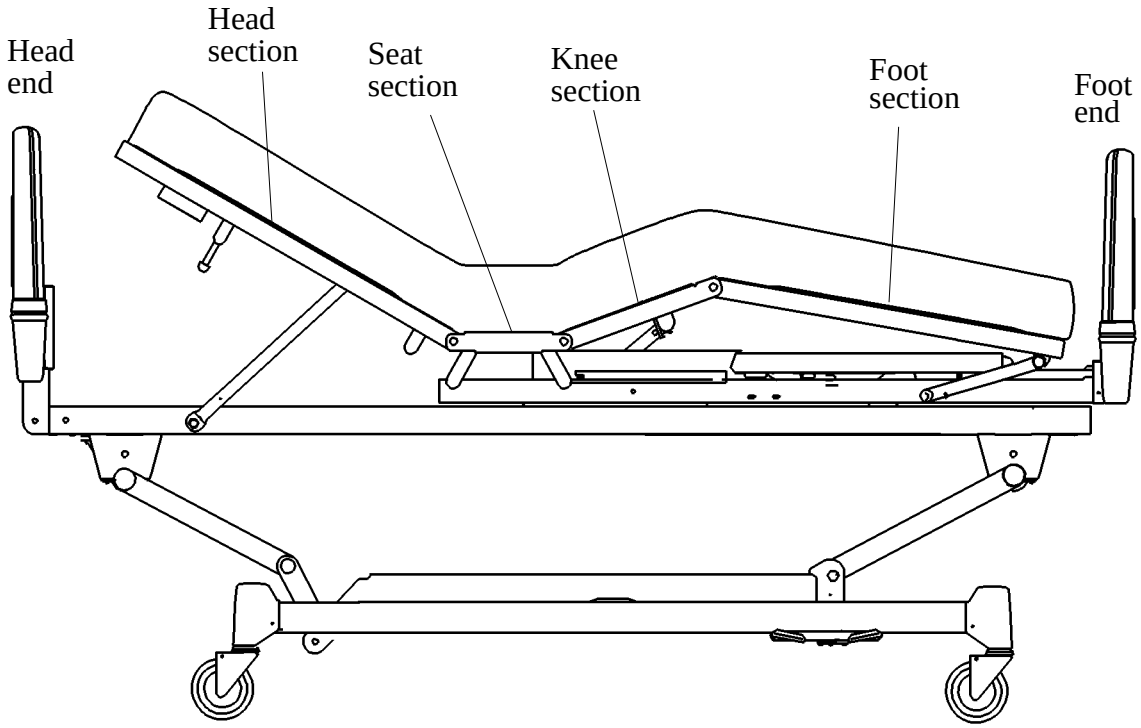


Figure 1-4. Hilow Positions

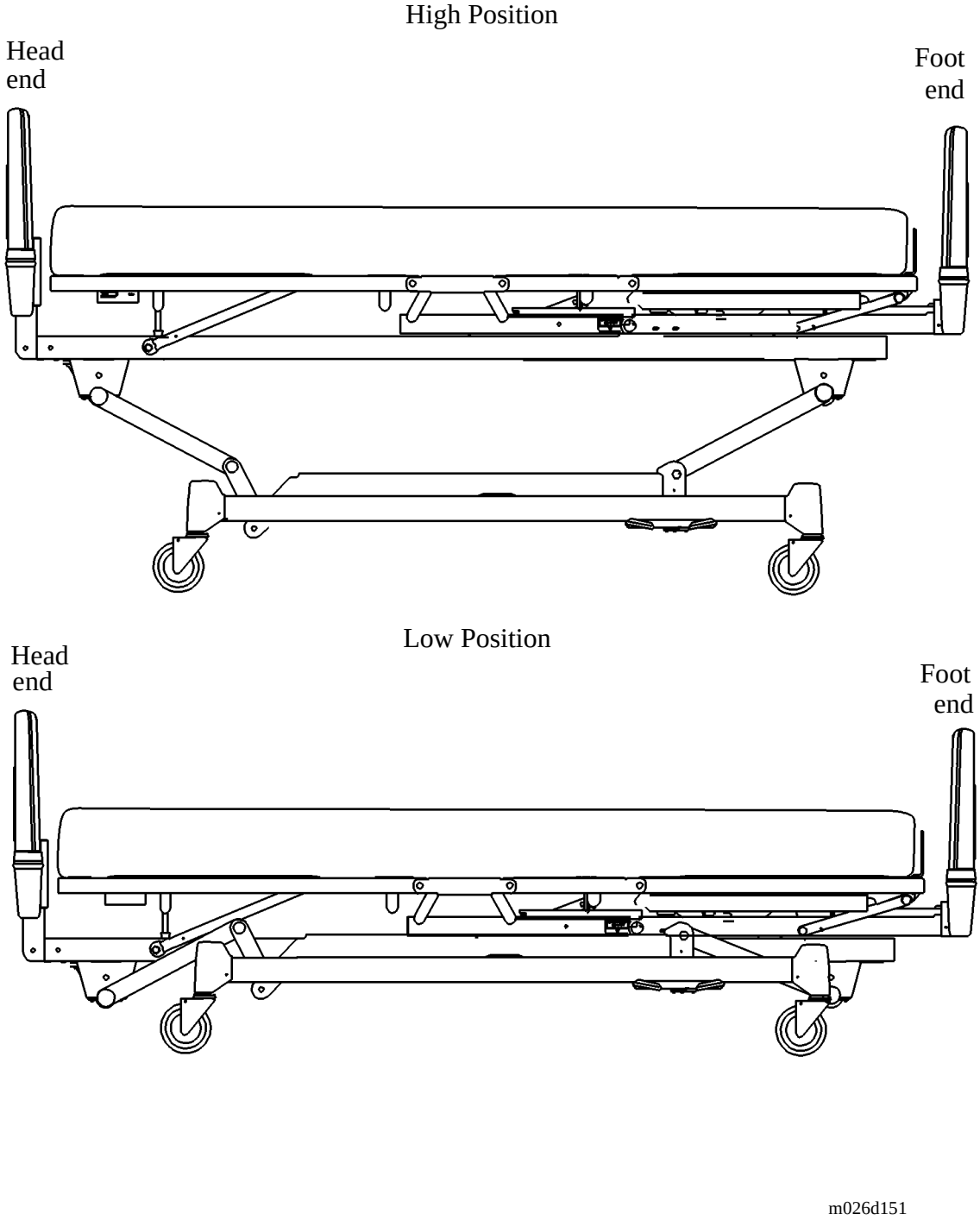


Figure 1-5. Automatic Contour Position

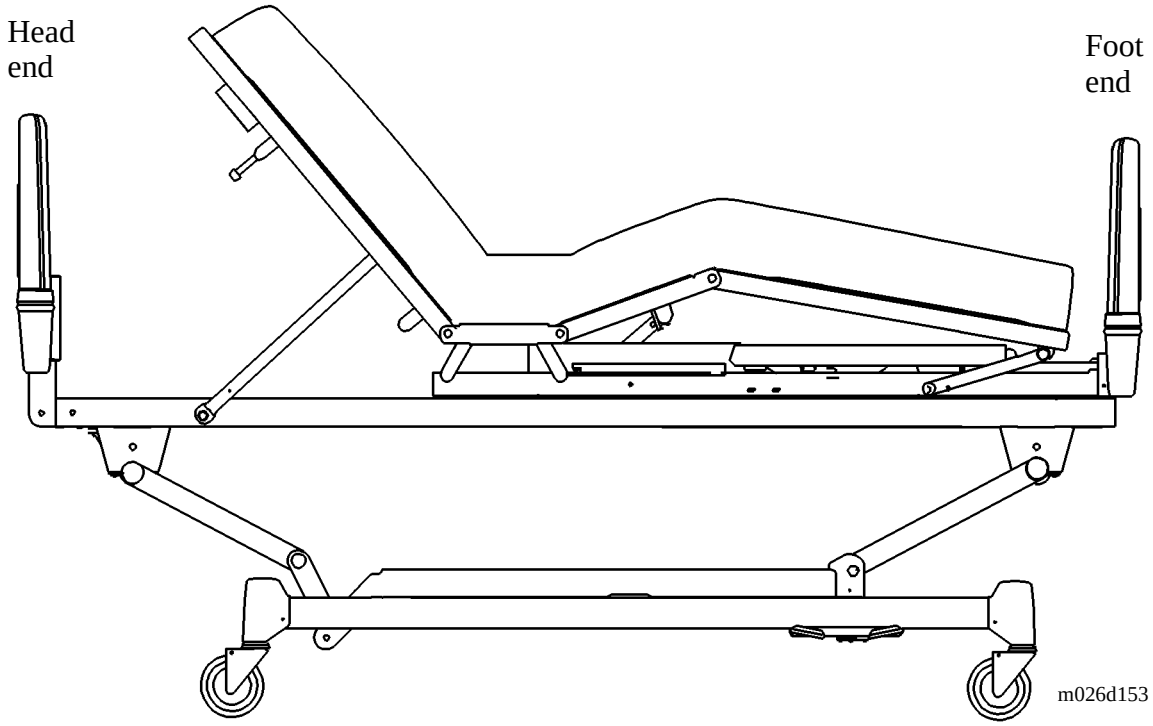


Figure 1-6. Chair Position

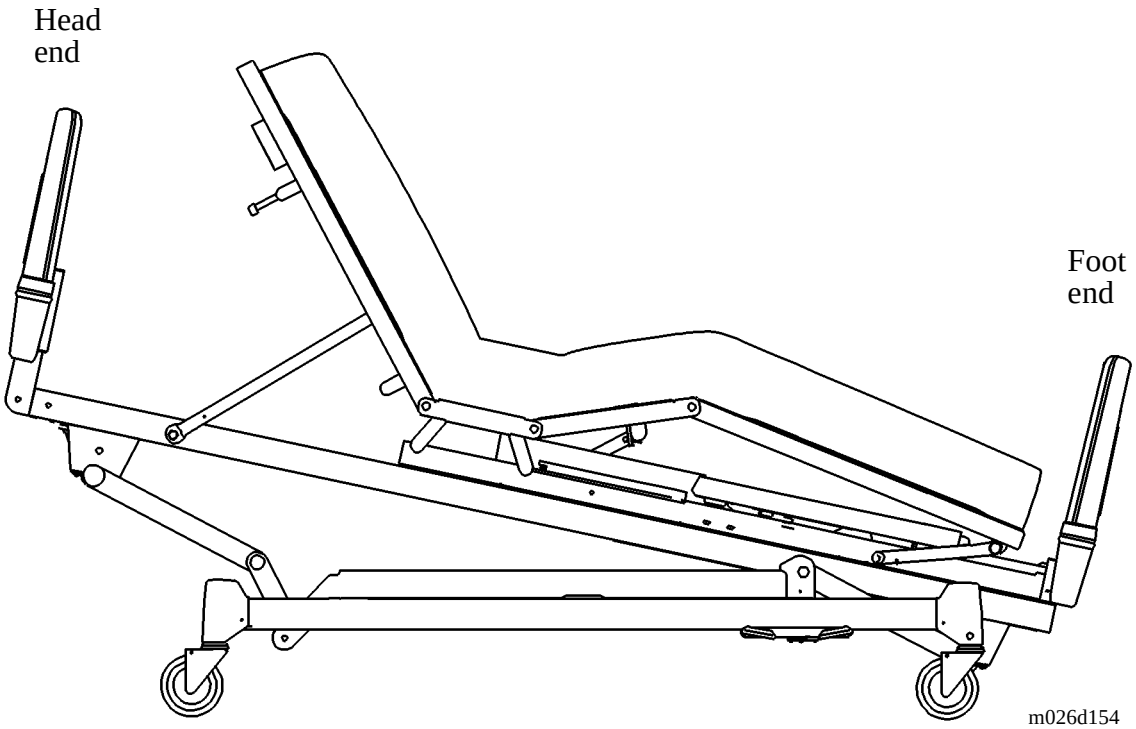
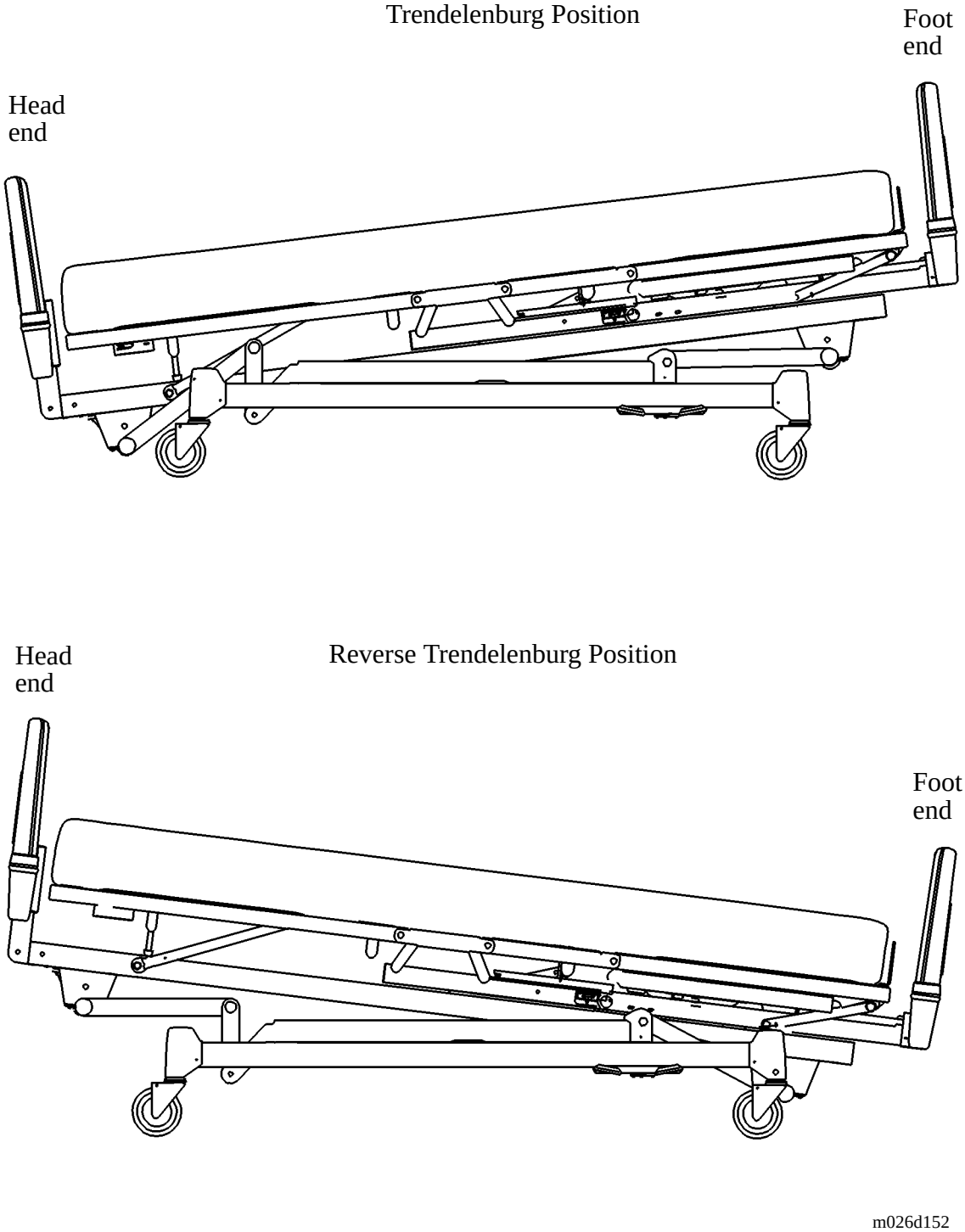


Figure 1-7. Trendelenburg/Reverse Trendelenburg Positions



Specifications

Physical Description

See table 1-1 on page 1-13 for Advance Series Bed specifications.

Table 1-1. Specifications

Feature	Dimension
Height overall—foot end—high position	41 1/2" (105.4 cm)
Height overall—foot end—low position	27 1/2" (70 cm)
Height overall—head end—high position	43" (109.2 cm)
Height overall—head end—low position	29" (73.7 cm)
Height—floor to top of mattress support surface—high position	31" (78.7 cm)
Height—floor to top of mattress support surface—low position	17" (43.2 cm)
Overall length (with cane bumpers) fully extended	93 1/2" (237.5 cm)
Overall length (with roller bumpers) fully extended	93 1/2" (273.5 cm)
Overall length (with cane bumpers) fully retracted	81" (205.7 cm)
Overall length (with roller bumpers) fully retracted	81" (205.7 cm)
Overall length (without bumpers) fully extended	91" (231.1 cm)
Overall length (without bumpers) fully retracted	78 1/2" (199.4 cm)
Overall width (including siderails in up position)	41 1/2" (105.4 cm)
Overall width (siderails stored with P818 bumpers)	36 1/2" (92.7 cm)
Total hilow travel	14" (35.6 cm)
Sleeping surface [accommodates 36" x 84" (91.4 cm x 213.4 cm) mattress]	36" x 82" (91.4 cm x 208.3 cm)
Bed frame clearance	7 1/2" (19 cm)
Weight—bed with casters (model P1104)	380 lb (172.4 kg) [Panels—add 20 lb (9 kg)]
Weight—bed with casters (model P1105/P1106)	385 lb (174.6 kg) [Panels—add 20 lb (9 kg)]
Weight—bed with casters (model P1145/P1146)	445 lb (201.8 kg) [Panels—add 25 lb (11.3 kg)]

Feature	Dimension
Maximum patient weight	500 lb (226.8 kg)
Hilow travel time: 115 volt models 230 volt models	 21 seconds 24.5 seconds

Head Section Inclination

The bed is mechanized such that the occupant may elevate the head section by voluntary selection of a finger touch activator. The head up/head down activators are of a momentary type. The activators are pictorially labeled to indicate their function. The activators are fixed in relation to the head section within easy access of the occupant regardless of the degree of inclination.

CPR Release

The head section is mechanized for emergency lowering. A releasing mechanism is included for rapid lowering. The release mechanism requires positive (intentional) action for release. The bed mechanism recognizes the de-coupling and automatically lowers the knee section and recouples the head mechanism. This ensures proper head section lifting after the emergency. (This is not available on model P1104.)

Knee Section Inclination

The bed is mechanized such that the occupant may elevate the knee section by voluntary selection of a finger touch activator. The knee up/knee down activators are of a momentary type. The activators are pictorially labeled to indicate their function. The activators are fixed in relation to the head section within easy access of the occupant regardless of the degree of inclination.

Foot Section Inclination

The foot section may be independently elevated by manually raising and engaging the support arm. Manual repositioning does not affect the other bed features or operation.

Hilow Sleeping Surface

The bed is mechanized such that a patient or nurse may raise or lower the sleeping surface to facilitate examination, bed ingress, and bed egress. The activators are pictorially labeled and fixed in relation to the head section of the bed. The activators face toward the nurse position but are accessible for occupant activation. The activators are a momentary type contact.

Retractability

The bed is mechanized such that the upper frame moves toward the head end in conjunction with the head up motion. This aspect is to afford an approximate fixed location for occupant access to peripheral fixtures (e.g. storage cabinets) as afforded by the normal flat position.

Mobility/Braking and Steer System

The bed is mounted on four precision bearing swivel type casters. Each caster has molded polyurethane wheels. The caster minimum diameter is 5" (12.7 cm), the minimum tread width is 31/32" (2.46 cm), and the minimum stem diameter is 1" (2.54 cm). The wheels have precision bearing axles and swivels for high mobility. They are easily removed for cleaning or replacing.

The caster braking system is activated by foot pedals located on either side of the bed to allow single foot operation to lock two casters (wheels and swivels). Activation of the steer system locks the swivel on one caster (steer lock) to allow for easy steering of the bed. The steer system is foot operated by pedals located on either side of the bed. Foot pedals for operation of the braking system and steering system are located as indicated in convenient, accessible locations on both sides of the bed and are identified clearly as to the proper operation of the central locking system.

Trendelenburg/Reverse Trendelenburg

The bed is mechanized such that Trendelenburg or Reverse Trendelenburg may be achieved from the nurse control panel only. The activation is a single operation from any bed position.

There is a visual indicator showing the degree and inches of Trendelenburg as it is being obtained. Use the Trendelenburg/Reverse Trendelenburg switch, or any hilow switch, to automatically bring the bed out of either Trendelenburg position.

Manual Operation

The bed is mechanized such that the hilow and head positions may be manually moved in case of emergency, power failure, or remote location (e.g. hallway).

Lockouts

Lockouts are provided in the nurse control panel to inhibit patient operation of the head, knee, and hilow features or to turn off the back lighting of the siderail switches. A lockout also prevents patient adjustment of the mattress pressure. Activation of the knee lockout precludes knee section movement for contour when the head operating switch is actuated. Trendelenburg and Reverse Trendelenburg are unaffected by lockouts.

Automatic Contour

The bed is mechanized such that an automatic contour position (head up/knee up) may be attained by voluntary selection of the head up activator. This function is additionally mechanized such that switching the knee function switch in the nurse control panel to the off position inhibits the knee rising when the head up switch is activated. Automatic contour position can be operated to the flat position by the patient to allow easy access to the bed.

Chair Position

The chair position is achieved from any position by activating the chair switch to the **In** position. The bed automatically and simultaneously goes to the low hilow position while raising the sleep surface to the head up contour position. After this is achieved, the bed goes into Reverse Trendelenburg to obtain the bed's chair position. Press the chair switch to **Out** to remove the bed from the chair position.

Nurse Control Panel

A nurse control panel is located in the top of the bed footboard control panel. All panel switches and the inch/degree indicator are located under the nurse control panel cover. The safety and information indicator panel lights are not located under the panel cover and are therefore, visible at all times from outside the footboard control panel. Access is limited so that a bed occupant may not accidentally activate these functions.

The nurse control panel houses:

- Trendelenburg/Reverse Trendelenburg inch/degree indicator
- Chair position switches
- Trendelenburg control switch
- Reverse Trendelenburg control switch
- Hilow control switches
- Prevention selector switch (P1135, P1136, P1145, and P1146 only)
- Comfort selector switch (P1135, P1136, P1145, and P1146 only)
- Mattress pressure adjustment switches
- Pressure relief selector switch (P1155 and P1165 only)
- Heel relief selector switch (P1155 and P1165 only)
- Auto firm selector switch (P1155 and P1165 only)
- Siderail back lighting on/off switch
- Siderail hilow function lockout switch
- Siderail knee function lockout switch
- Siderail head function lockout switch
- Scale on/off switch (P1115, P1116, P1145, P1146, and P1165 only)
- Siderail sleep surface lockout switch (P1135, P1136, P1145, P1146, P1155, and P1165)
- Sleep surface power lockout switch (P1135, P1136, P1145, and P1146 only)
- Bed motor power lockout switch

The safety and information indicator panel contains:

- Motor power off indicator light
- Ground loss (reverse polarity) indicator light (115 volt models only). This light is inoperative on 230 volt models.
- Brake not set indicator light
- Prevention mode indicator light (P1135, P1136, P1145, and P1146 only)
- Excessive airloss indicator light (P1135, P1136, P1145, and P1146 only)
- Pressure relief indicator light (P1155 and P1165 only)
- Heel relief indicator light (P1155 and P1165 only)
- Service required indicator light (P1155 and P1165 only)
- Bed not in low position indicator light

Footboard Control Panel

CAUTION:
Unplug the bed from its power source. If the bed is not unplugged, a power surge can damage the scale unit.

The footboard control panel is removable from the bed. It may be raised by removing two retaining pins. Unplug the bed from its power source prior to installing the footboard control panel.

The footboard control panel provides handles for ease of bed mobility and steering control without causing bed damage, panel damage, or inhibiting bed functions. The footboard control panel protects the controls housed within it from damage due to impact.

Head Panel

The head panel is removable and free of protrusions, so that in emergencies the head panel may be used for CPR applications. The head panel provides handles for ease of bed mobility and steering control, without causing bed damage or footboard control panel damage.

Mattress/Frame Interface

The mattress supporting adjustable frame is 36" x 82" (91.4 cm x 208.3 cm) and is covered with four 16 gauge [0.060" (1.5 mm)] thick formed steel panels. The panels have formed down outer surfaces to prevent sharp edges.

Both steel sleep surfaces have restraint attachments, drainage bag holders, and a mattress stop. The restraint attachments are welded to the underneath side of the head and foot sections. The restraint attachments and drainage bag holders are made of number three gauge [0.243" (6.2 mm)] diameter steel wire. The adjustable frame has a rigid mattress stop attached to the foot section that can be folded down when not in use. The mattress stop is made of 0.188" x 0.750" (4.8 mm x 19 mm) wide round edge strip steel, not less than 3.750" (9.5 cm) high.

IV Rod Accommodation

There are a minimum of six locations to accommodate the installation of an IV rod—two at the head end, two in the seat section, and two at the foot end. Each location has sufficient structural integrity that fracture frame equipment may be used without degradation of function or structure.

Docking/Wall Protection

The bed is equipped with either docking bumpers or wall protecting roller bumpers. (The bed can be retrofitted as desired.)

Siderails

The bed has sectionalized (1/2 length) siderails. The bed is equipped with both head and foot siderails as standard equipment. The siderails retract and are storable within the confining limits of the head panel and footboard control panel or sleep surface frame. The foot siderail is equipped with an intermediate stop allowing greater access for occupant ingress and egress.

Head Siderails

Both head siderails contain illuminated controls. Each head siderail contains patient (head and knee) controls and a hilow control. Each head siderail accepts the Patient Phone. The bed is configured such that the following functions may be included as part of one or both of the head siderails:

- Nurse call activator (both sides required)
- Ambient light actuator (both sides required)
- Sleep surface firmness activator
- Entertainment center actuator (music, TV, radio) (both sides required)
- Bed exit system on/off switch, reset switch, and indicator light (one side only)
- Patient Phone

Night Light

The bed contains a low level night light that illuminates the general foot contact area for ingress or egress. The light is protected against breakage. Lighting is configured such that adjacent patient locations have a minimal annoyance factor. (This is not available on model P1104.)

Bed Exit System

The bed is mechanized such that a warning signal is placed through the nurse call system if a patient exits the bed. This function can be selected by activating the on/off switch in the head siderail. There is a selectable two, four, or six second delay in the audible signal. The selectable delay and reset switches are located in the head siderail.

Excessive Airloss Alert

The bed is mechanized such that a warning signal is placed through the nurse call system if the compressor runs excessively. This function is operative when the bed exit system is activated and the bed is equipped with the DynamicAire or ZoneAire Sleep Surface only.

Electrical Description

The electrical power system is mechanically insulated from the metal parts of the bed. No additional electrical components, such as isolation transformers, are required to make this bed meet applicable electrical codes. The insulation materials are of the type that will not deteriorate to an unsafe level over an 18 year period with normal use.

Each bed is factory tested for complete operation with and without load. Each bed is tested for insulation integrity and micro leakage currents. Before shipment, each bed must indicate less than 65 micro amperage leakage current ungrounded on 115 volt models (90 micro amperage leakage current ungrounded on 230 volt models).

The supply cord is #16 AWG low leakage 3 conductor type STO. It extends 6 feet (182.9 cm) from the head end of the bed. The supply cord is UL listed, and the attachment plug cap is UL listed hospital grade.

All electrical components of the bed have been UL approved for this application.

The bed is a retractable type that moves the patient closer to the head end of the bed automatically when the head section is elevated. When the head section is elevated, the overall length of the bed is reduced in proportion to the elevation of the head section.

The bed is equipped with a night light that automatically activates as the ambient light decreases. The light illuminates an area under the bed at both sides.

The bed automatically tests its electrical circuitry to ensure that the system is properly wired in regard to ground and correct polarity. Deficiencies in the grounding or the polarity of the building wiring to this bed are automatically indicated by a red signal light located in the nurse control panel on the foot end of the bed. This light does not operate on 230 volt beds.

Motors

There are four individual motors to power the separate functions of the bed.

The hilow motors have manual crank capability to allow operation in the event of power failure. The head has a release mechanism to permit flattening of this section of the sleep surface.

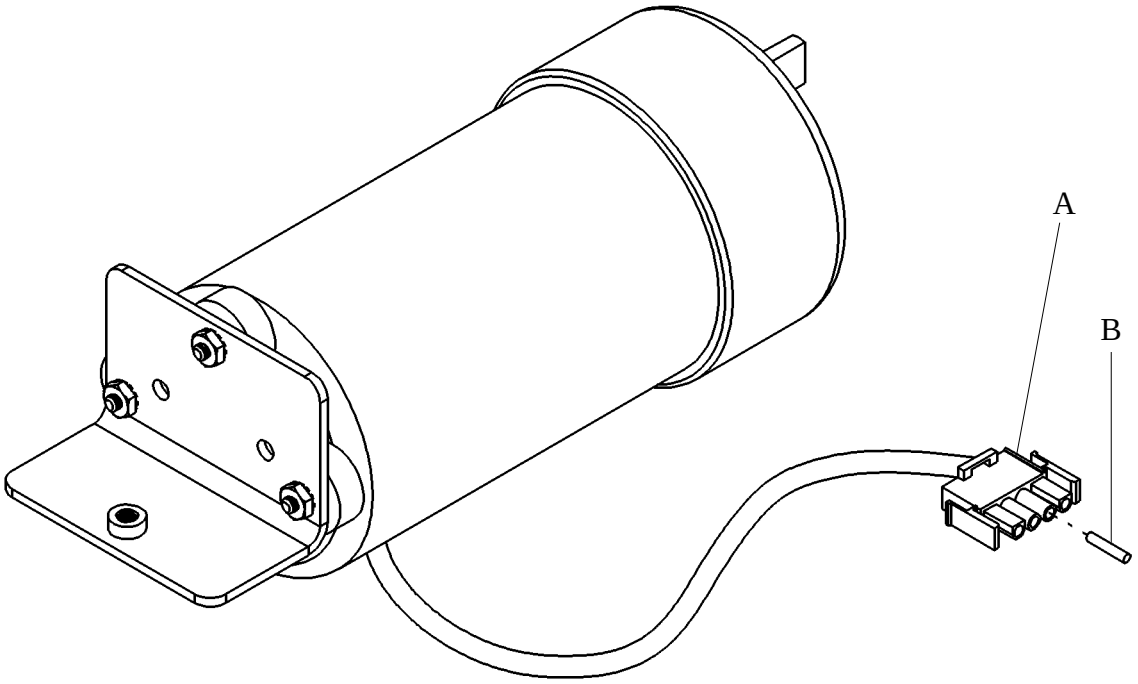
All of these motors are a plug-in design to make them easily and rapidly removable from the bed in the event of motor problems. These motors are designed and made especially for the individual functions they are to perform. Standard shelf motors not designed with the proper horsepower, gear ratio, etc., are not acceptable.

Thermals are an integral part of the motors, protecting them in the event there is an overload condition. They stop the motor automatically if it heats up to a certain temperature. The motor will not run again until the thermal is reset. All Advance Series Bed motors are equipped with automatic thermal resets that allow the motor to operate after it has cooled down.

Hilow (Head and Foot)

The hilow motor assemblies are identical except for a polarizing pin in the power cord connector of the hilow foot motor. To convert a hilow head motor to a hilow foot motor, add a polarizing pin (B) to its power cord connector (A) as shown in figure 1-8 on page 1-23. To convert a hilow foot motor to a hilow head motor, remove the polarizing pin (B) from its power cord connector (A).

Figure 1-8. Hilow Head or Foot Motor Assembly—Typical



m026d030

- 3.5 amps maximum
- Permanently lubricated
- Totally enclosed
- Single phase
- Overload protected with automatic reset thermal
- 115 volts AC, 60 hertz, 1/6 HP, 95 RPM (230 volts AC, 50/60 hertz, 1/6 HP, 95 RPM on 230 volt models)

Head

- 2.4 amps maximum
- Permanently lubricated
- Totally enclosed
- Single phase
- Overload protected with automatic reset thermal
- 115 volts AC, 60 hertz, 1/6 HP, 225 RPM (230 volts AC, 50/60 hertz, 1/6 HP, 223 RPM on 230 volt models)

Knee

- 1.8 amps maximum
- Permanently lubricated
- Totally enclosed
- Single phase
- Overload protected with automatic reset thermal
- 115 volts AC, 60 hertz, 1/9 HP, 74 RPM (230 volts AC, 50/60 hertz, 1/9 HP, 95 RPM on 230 volt models)

DynamicAire Sleep Surface

The DynamicAire Sleep Surface is a self-contained unit with the following specifications:

- 1.0 amp maximum
- Permanently lubricated
- Totally enclosed
- Single phase
- 115 volts AC, 60 hertz (230 volts AC, 50/60 hertz on 230 volt models)

ZoneAire Sleep Surface

The ZoneAire Sleep Surface is a self-contained unit with the following specifications:

- 1.4 amps nominal
- Permanently lubricated
- Totally enclosed
- Single phase
- 115 volts AC, 60 hertz

Limit Switches

Two types of limit switches may be encountered. One type is a miniature electromechanical “snap action” switch, the other type is a electromagnetic sensor switch (which is a production replacement for the electromechanical type switch). Both types determine the drive screw end-of-travel limit set points, contour up, and contour down.

Two different logic control boards supply power to the two different types of limit switches. Their major difference is in their hilow protect circuit, scale interconnect circuit, and the connector interface system.

Regulations, Standards, and Codes

- Class grounded equipment per UL 544
- CSA risk class 2G per CA per CSA 22.2

Model Identification

See table 1-2 on page 1-26 for Advance Series Bed model identification.

Table 1-2. Model Identification

Model Number		Description
115 Volt Models	230 Volt Models	
1104	N/A	Bed without scale, DynamicAire Sleep Surface or ZoneAire Sleep Surface, CPR, and night light
1105	1106	Bed without scale or DynamicAire Sleep Surface
1115	1116	Bed with scale and upgradeable to include the DynamicAire Sleep Surface
1135	1136	Bed with DynamicAire Sleep Surface and upgradeable to include scale
1145	1146	Bed with scale and DynamicAire Sleep Surface
1155	N/A	Bed without scale and ZoneAire Sleep Surface
1165	N/A	Bed with scale and ZoneAire Sleep Surface

Siderail Option ID

Hill-Rom offers basic siderail options with the Advance Series Bed. An example of how a product number appears is: P1165E55. See table 1-3 on page 1-26.

Table 1-3. Product Number Example

Product Number Description	
P	Product number prefix
1165	Model number of bed
E	Version number of bed
55	Siderail option number

See table 1-4 on page 1-27 for a description of the siderail options.

Table 1-4. Siderail Options

Siderail Option	Description
52	Bed functions, nurse call, and entertainment
53	Bed functions, nurse call, entertainment, and lighting
54	Bed functions, nurse call, entertainment, and bed exit
55	Bed functions, nurse call, entertainment, bed exit, and lighting
56	Bed functions, nurse call, and bed exit
59	Bed functions and future options

General Operation

The Advance Series Bed incorporates independent motors to achieve the following operational features:

- Bed height—up/down
- Foot section—up/down
- Head section—up/down
- Trendelenburg—in/out
- Reverse Trendelenburg—in/out
- Chair position

The following optional features are controlled by the patient or nurse using the siderail, or by the nurse using the nurse control panel. These features are governed by circuit board logic:

- DynamicAire Sleep Surface—inflate/deflate
- ZoneAire Sleep Surface—inflate/deflate

Footboard Control Panel

The footboard control panel is located in the top of the bed's footboard. All control switches and the inch/degree indicator are located under the footboard control panel cover. Access is limited so that a bed occupant may not accidentally activate these functions. The power, siderail lockout, and sleep surface switches on the footboard control panel for the Advance Series Bed models P1155 and P1165 have a green LED in the top left corner which lights when the indicated function is active (on) and is not lit when the function is not active (off).

NOTE:
When the LED is lit on the footboard control panel, the indicated function is active or operational.

A set of information indicator lights (LEDs) are located on the footboard control panel. These LEDs are not under the footboard control panel cover and are visible at all times. When the LED is lit, the indicated information is valid.

CAUTION:
Do not switch the footboard control panels between the 3-motor and 4-motor Advance Series Beds. Equipment damage can occur.

Automatic Contour

Every Advance Series Bed has a feature called automatic contour. This feature raises the knee section of the bed up to a full 15° automatically as you raise the head section. Automatic contour prevents the patient from sliding to the foot end of the bed when the head section is raised. Limit switches control this feature.

If automatic contour is not wanted, turn the knee lockout switch, located at the nurse control panel, to the off position. This switch also eliminates the normal operation of the knee function. You can temporarily disable the automatic contour function by simultaneously depressing the head up and knee down on the siderail.

Head Panel and Footboard Control Panel

Advance Series Beds have post-type bed end mountings. The head panel and footboard control panel slide down on two vertical mounting posts located at each end of the bed. The head panel is not locked in place. You can remove it by lifting it vertically off the mounting posts. Two pins lock the footboard control panel in position. To remove the footboard control panel, remove the two locking pins, and lift the footboard control panel off the mounting posts.

The head panel and footboard control panel feature multi-piece, injection molded, plastic construction with internal reinforcing ribs and a high pressure laminate (HPL) decorator panel. They also include steel tubing inserts for mounting purposes.

If it becomes necessary to replace parts or an entire head panel or footboard control panel, obtain the correct part numbers from the parts list located in chapter 5 of this manual. If you order an HPL decorator panel, or an entire head panel or footboard control panel, you must specify the color of the decorator panel. If you do not know the color, send a 2" (51 mm) or 3" (76 mm) square of the old HPL decorator panel for color matching.

CPR Release

There are two CPR release handles located under the left and right side of the head section. Use them to lower the head section in an emergency.

The CPR release lowers the head section from any elevated position. Activate it by pushing a button on the CPR release handle and pull out on the handle. Release the handle immediately after you pull it out.

When you activate the CPR release, the head section automatically lowers to the flat position, and the knee motor automatically lowers the knee section to the flat position. When the entire sleep surface is flat, the bed automatically resets itself for normal operation.

NOTE:
If the head section is elevated less than 24°, the knee section may not flatten completely when you activate the CPR release. If this happens, use the knee control to lower the knee section to the flat position. This will return the head and knee sections to proper alignment.

Head Section Elevation/Operation

CAUTION:
Do not activate the CPR release to manually lift the head section. If you do, the head section may not elevate properly until you manually reset it. If this occurs, see “Head Section” on page 4-9. Damage to the bed can occur when the head section is not properly reset if manually lifted using the CPR release.

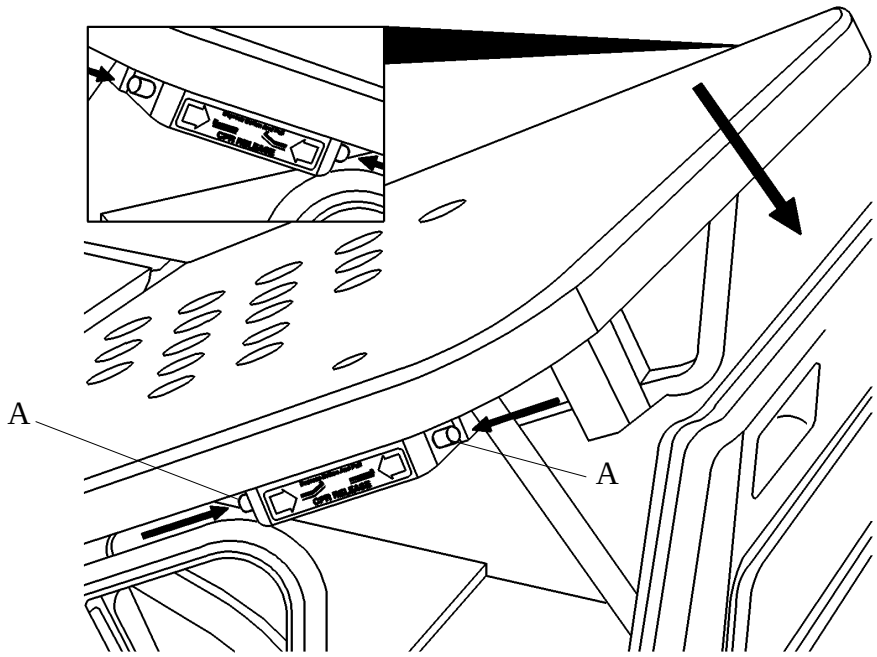
Raise the head section using the controls in the siderail. If electrical power is not available, see “Manual Operation of Bed (When Electric Power is Not Available)” on page 1-31. Do not lift the head section manually. It will not remain elevated.

Manual Operation of Bed (When Electric Power is Not Available)

Head Function

You can manually lower the head section to the flat position from any elevated position using the CPR release (A) (see figure 1-9 on page 1-31).

Figure 1-9. CPR Release



CAUTION:
Do not activate the CPR release to manually lift the head section. If you do, the head section may not elevate properly until you manually reset it. If this occurs, see “Head Section” on page 4-9. Damage to the bed can occur when the head section is not properly reset if manually lifted using the CPR release.

You can manually raise the head section by using a Hill-Rom P2217 IV rod as a crank. See “Cranking Procedure” on page 1-32.

Hilow Function

You can manually raise or lower the hilow head and hilow foot screw assemblies individually. This is done using a Hill-Rom P2217 IV rod as a crank. See“Cranking Procedure” on page 1-32.

Knee Function

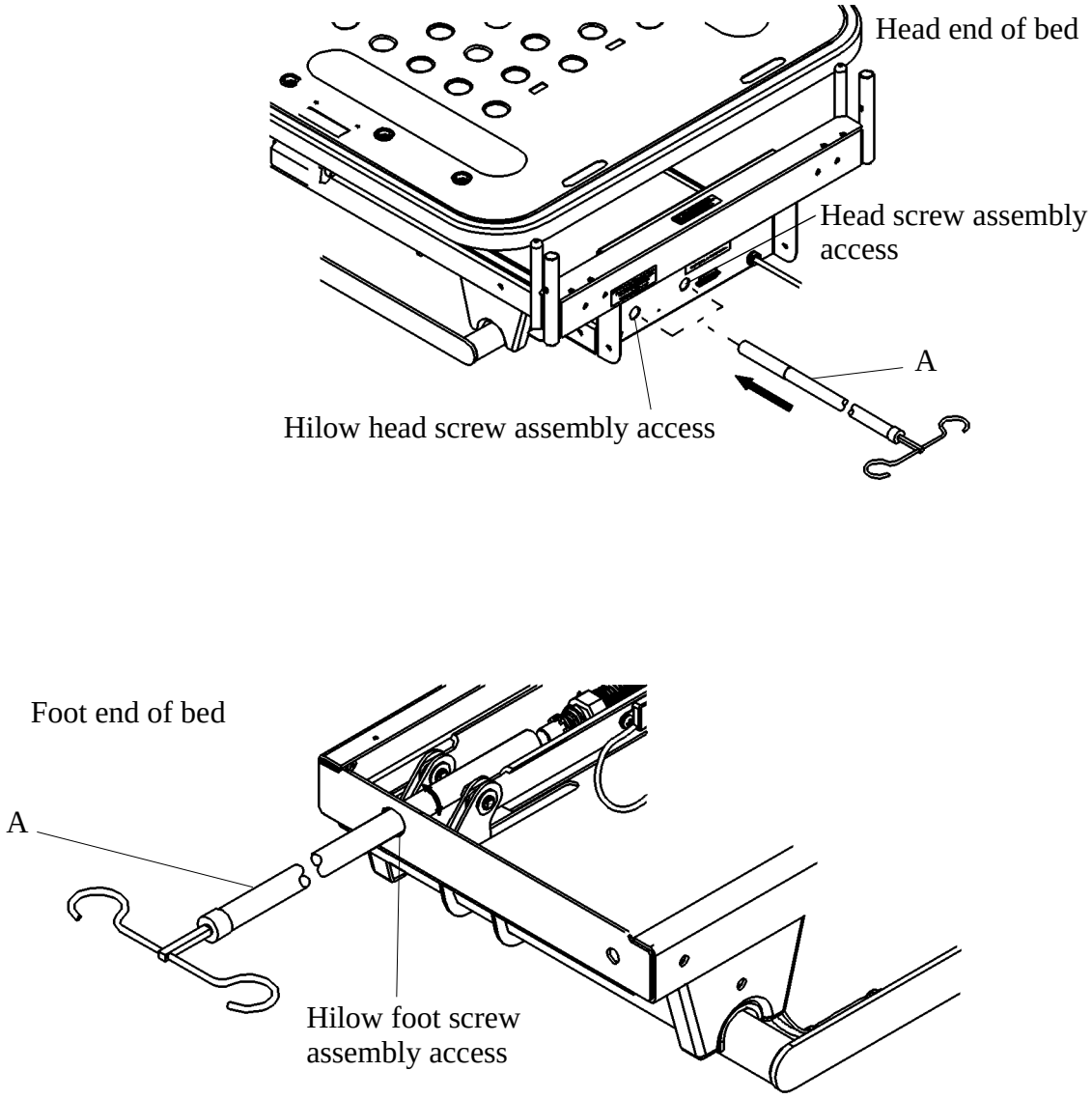
You can raise the knee section at any time by lifting up on the knee section or foot section near the pivot. There is no manual cranking of the knee section for raising or lowering.

Cranking Procedure

WARNING:
Unplug the bed from its power source before inserting the IV rod for manual operation. Unexpected resumption of power can cause the IV rod to rotate and cause injury.

1. Unplug the bed from its power source.
2. Extend the Hill-Rom P2217 IV rod.
3. If manually cranking the head section or the hilow head screw assembly:
   a. Insert the IV rod(A) through the appropriate access hole in the head end channel (see figure 1-10 on page 1-33).
   b. Push the IV rod until it engages the roll pin in the end of the screw assembly. The IV rod must be inserted far enough to push the ejection spring back from the roll pin, allowing the IV rod to engage the roll pin.

Figure 1-10. IV Rod Access



4. If manually cranking the hilow foot screw assembly:
   a. Insert the IV rod (A) through the lower foot end channel until it engages the roll pin in the end of the hilow foot screw assembly.
   b. Push the IV rod far enough to push the ejection spring back from the roll pin, allowing it to engage the roll pin.

CAUTION:
Crank the head screw assembly clockwise **only**. The actuator on the limit switch and the lift nut can become damaged if you crank the head screw assembly counterclockwise.

CAUTION:
Do not manually crank any of the drive screw assemblies past the low or high limits. Damage can occur to the individual drive screw if this happens.

5. Turn the IV rod either clockwise to raise or counterclockwise to lower the engaged function.

WARNING:
Remove the IV rod before plugging the bed into an appropriate power source. Resumption of power can cause the IV rod to rotate and cause injury.

6. When the function is at the desired setting, remove the IV rod from the screw assembly.

DynamicAire Sleep Surface

General

The DynamicAire Sleep Surface includes two air bladders encompassed with foam. Electronics monitor this closed air system to ensure proper inflation. The system operates in two modes, comfort and prevention. The DynamicAire Sleep Surface is non-reversible and easy to remove. Its life expectancy is 5 years or more based upon Hill-Rom's recommended operating and cleaning procedures.

Comfort Mode

The occupant can select the firmness or softness of the mattress by activating a momentary type switch located in the head siderails. The nurse can adjust the pressure from the nurse control panel located at the foot of the bed. The pressure of the upper bladder is adjustable from 0.04 to 0.90 psi.

Prevention Mode

In the prevention mode, both the patient and the nurse control of surface firmness and softness is locked out at the nurse control panel. The system automatically maintains the air bladders at: (values in psi)

- Bottom bladder 0.4 + 0.1/- 0.15
- Top bladder 0.20 ± 0.05

The system maintains this pressure regardless of bed articulation.

Mattress Components

Two types of DynamicAire Sleep Surface mattresses may be found. P923CD and P923ED components are shown in figure 1-11 on page 1-36. P923CD03 and P923ED03 components are shown in figure 1-12 on page 1-36:

Figure 1-11. DynamicAire Sleep Surface Mattress Components—P923CD and P923ED

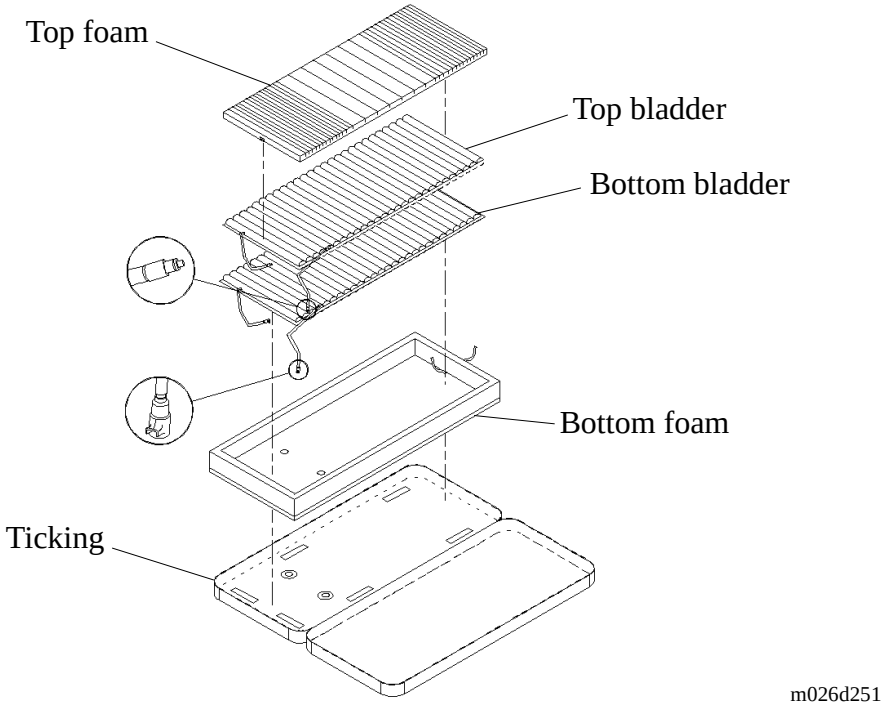
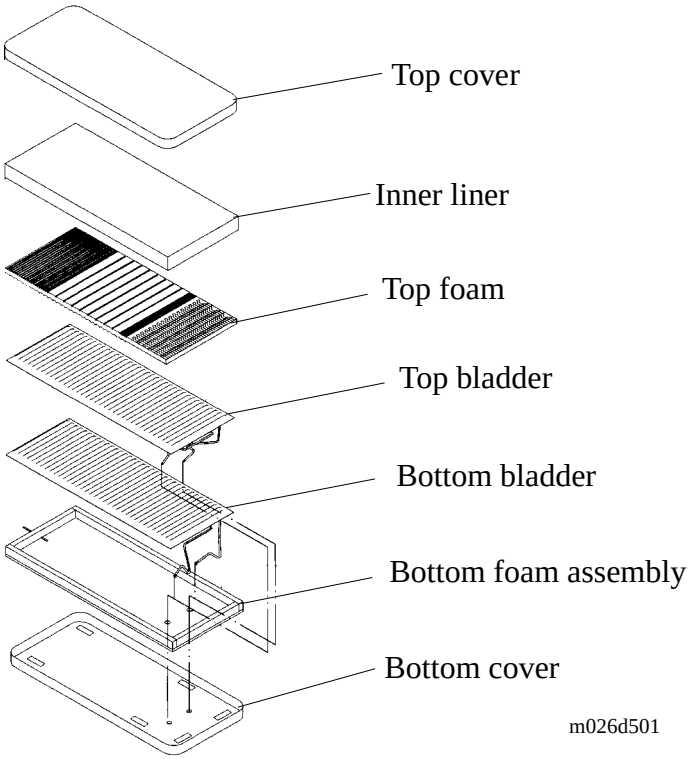


Figure 1-12. DynamicAire Sleep Surface Mattress Components—P923CD03 and P923ED03



Ticking—P923CD and P923ED

The zippered clam shell design polyester ticking covers both foam and air bladder components. The bottom portion of the ticking has six magnets enclosed in pockets. The magnets help hold the mattress and sheets in place by adhering to the metal sleep surface.

Top and Bottom Covers—P923CD03 and P923ED03

The top and bottom covers enclose both foam and air bladder components. The bottom cover has six magnets enclosed in pockets. The magnets help hold the mattress and sheets in place by adhering to the metal sleep surface. The polyurethane coated nylon top cover is removable for easy replacement.

Inner Liner—P923CD03 and P923ED03

The polyurethane inner liner is located between the top cover and the top foam. The inner liner allows the top cover to slide against the top foam to reduce the wear on the top foam.

Top and Bottom Foam—Both Types

The top foam is segmented to provide different densities of support for the patient. It also provides some protection against punctures to the upper bladder from needle sticks and other sharp objects.

The lower foam is shaped like a tub with dense side walls. This tub cradles the upper and lower air bladders. The dense side walls give support to the patient when entering and exiting the bed.

Top and Bottom Air Bladders—Both Types

The air bladders are contained inside the lower foam section. The top and bottom air bladders used in the DynamicAire Sleep Surface are identical, only the hose connections from the compressor determine the bladder's function.

When the DynamicAire Sleep Surface is switched to the comfort mode, the caregiver or patient can adjust the top bladder between 0.04 to 0.90 psi.

When the DynamicAire Sleep Surface is switched to the prevention mode, the top bladder can not be adjusted. The system automatically maintains the pressure at 0.20 ± 0.05 psi.

In both the comfort and prevention modes, the system automatically maintains the pressure in the bottom bladder at 0.4 + 0.1/- 0.15 psi.

Bed Components

The following DynamicAire Sleep Surface bed components are shown in figure 1-13 on page 1-39:

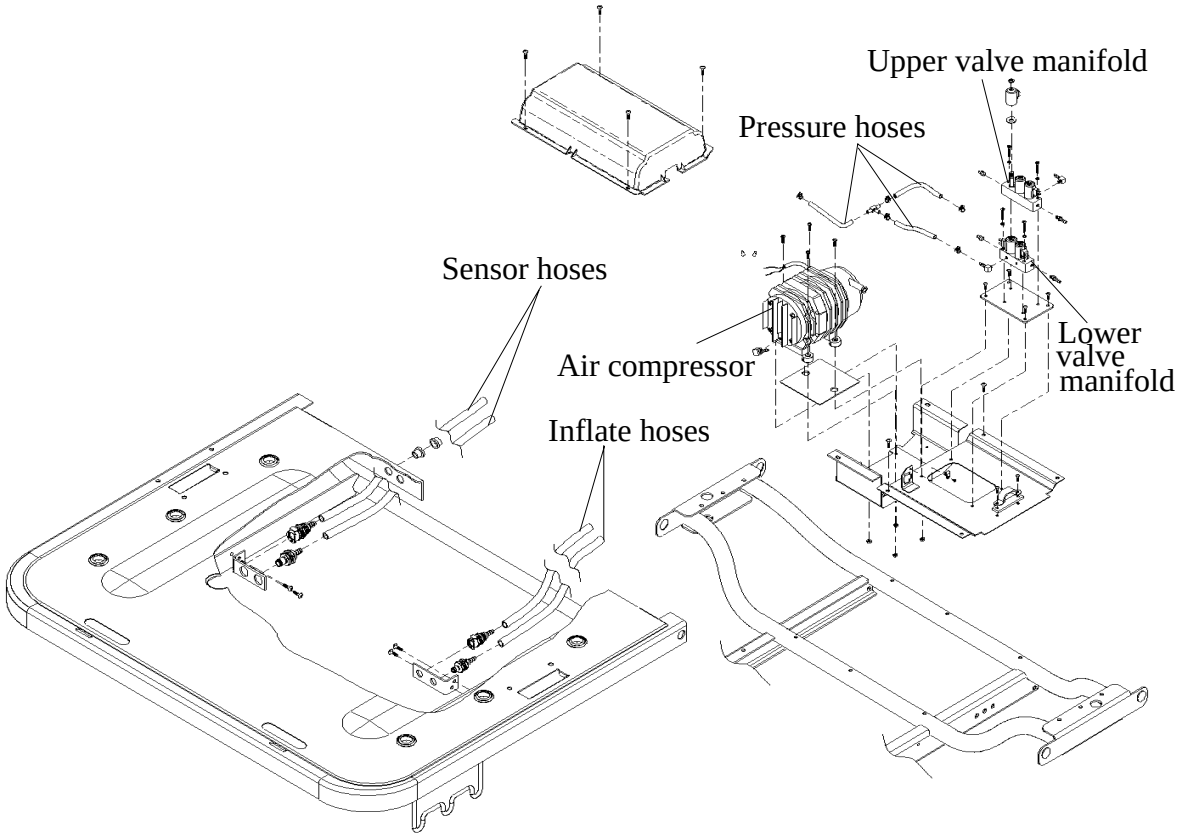
- Sensor hoses from mattress to air control board
- Inflate hoses from valve manifolds to mattress
- Air compressor
- Pressure hoses from air compressor to valve manifolds
- Upper valve manifold
- Lower valve manifold

Air Compressor

The air compressor is part of the air system assembly located under the sleep surface seat pan.

The air compressor runs on 115V AC and is controlled by the air system control board. It provides inflate pressure to the top and bottom air bladders. This air compressor has no suction capability.

Figure 1-13. DynamicAire Sleep Surface Bed Components



Upper and Lower Valve Manifolds

The upper and lower valve manifolds are part of the air system assembly.

The upper valve manifold controls only the top air bladder of the DynamicAire Sleep Surface. It consists of a ported aluminum block and three solenoid activated valves. Two of the valves vent air from the bladder when the softer switch is activated. One valve allows inflation when the firmer switch is activated.

The lower valve manifold controls only the bottom air bladder of the DynamicAire Sleep Surface. It consists of a ported aluminum block and two solenoid activated valves. One valve is used for the inflate function and one valve for the deflate function.

Air Hoses

The air hoses used with the DynamicAire Sleep Surface are color-coded. Blue hoses are for the top bladder. Red hoses are for the bottom bladder.

The larger diameter hoses are the inflate hoses. They connect the air compressor to the air bladders. The smaller diameter hoses are sensor hoses. They connect the air bladders to the sensors on the air system control board.

The pressure hose from the air compressor splits into two lines; one feeds the upper valve manifold, and the other feeds the lower valve manifolds.

ZoneAire Sleep Surface

General

The ZoneAire Sleep Surface is a multiple zone mattress used for the reduction of patient interface pressure. The caregiver can select the proper mode of operation dependent upon the patient's need.

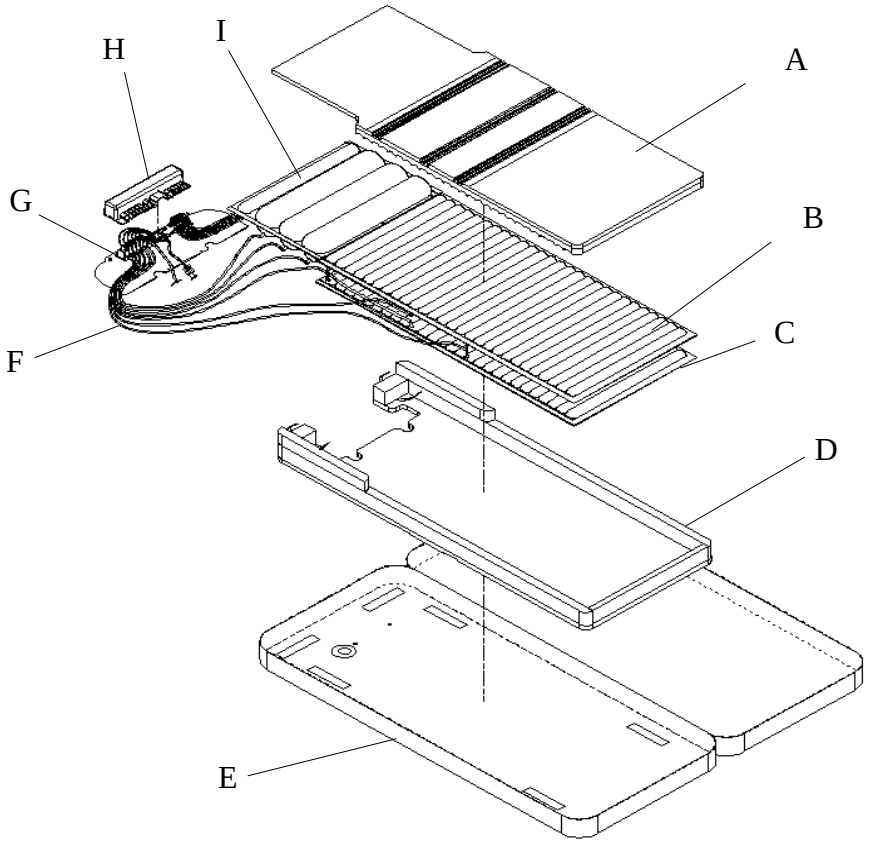
Physical Description

Mattress Ticking

Two different colored tickings are available as a cover for the sleep surface: the blue-green Staph-Chek Comfort tick and the dark green Ultron tick.

The zippered clam shell design polyester ticking (E) covers the top foam (A), bottom foam (D), the upper main air bladder (B), the lower main air bladder (C), the heel air bladder (I), and their related components (see figure 1-14 on page 1-42). The bottom portion of the ticking has six magnets enclosed in pockets located around the outer edge of the mattress. These magnets help hold the mattress and sheets in place by adhering to the metal sleep surface. A buckle, located at the foot end of the mattress, holds the mattress in place on the hard pan deck.

Figure 1-14. ZoneAire Sleep Surface Mattress Assembly



Mattress Top and Bottom Foam

The top foam (A) is segmented to provide different densities of support for the patient. It also provides some protection against punctures from sharp objects to the upper bladder (B).

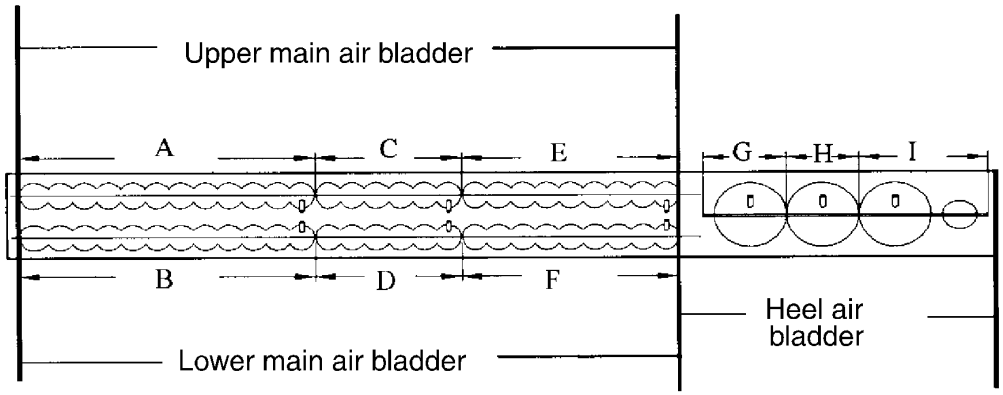
The bottom foam (D) is shaped like a tub with dense side walls. The foot end is cut out to allow room for the surface control module (G) and locator plate. This tub cradles the upper main air bladder (B), the lower main air bladder (C), and the heel air bladder (I).

Mattress Main Air Bladders—Upper and Lower

The main air bladders are contained inside the bottom foam section and are used in all modes of operation. The upper main air bladder (B) and the lower main air bladder (C) are identical, only the hose connections from the surface control module determine the bladder functions.

The two main air bladders are divided into three zones: the head (A and B), the seat (C), and the knee (D, E, and F) sections (see figure 1-15 on page 1-43).

Figure 1-15. ZoneAire Sleep Surface Bladder Zones



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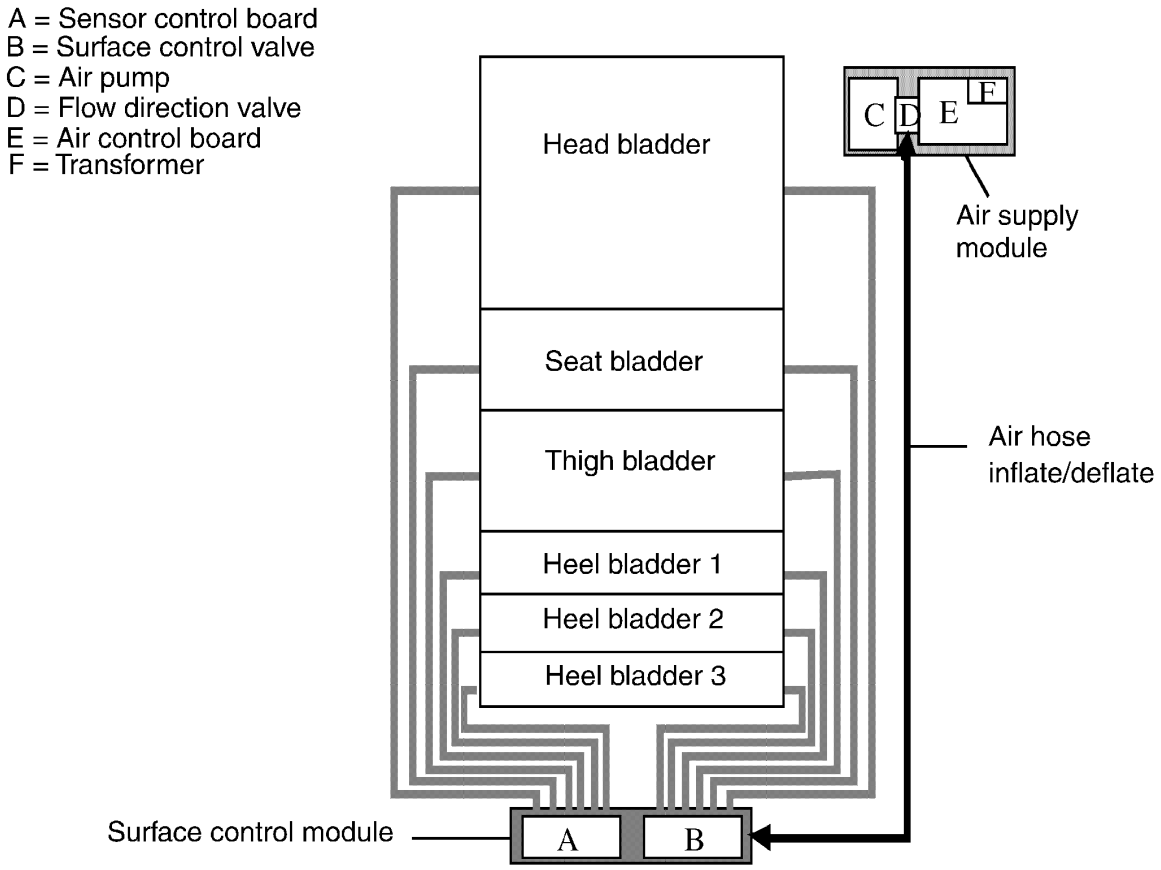
Heel Air Bladder

The heel air bladder is divided into three zones: heel 1 (G), heel 2 (H), and heel 3 (I) sections. These zones are connected to and controlled by the surface control module. (The caregiver selects the heel relief zone depending upon which bladder the patient's heel is resting.)

Air Hoses

The ZoneAire Sleep Surface has one air hose that connects the air pump (through the flow direction valve) to the surface control module inside the mattress (see figure 1-16 on page 1-44). This air hose both inflates and deflates the air bladders. The connection from the mattress to the air hose connector is water resistant and disconnects with one hand.

Figure 1-16. ZoneAire Sleep Surface Hose Connection Diagram



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Six air hoses connect the surface control valve assembly (B) to the mattress air bladders. These air hoses are used for both inflate and deflate functions. The switching valve assembly is located on the left side of the surface control module inside the mattress.

Six air hoses connect the mattress air bladders to the pressure sensors. The pressure sensors are located on the sensor control board (A) inside the mattress.

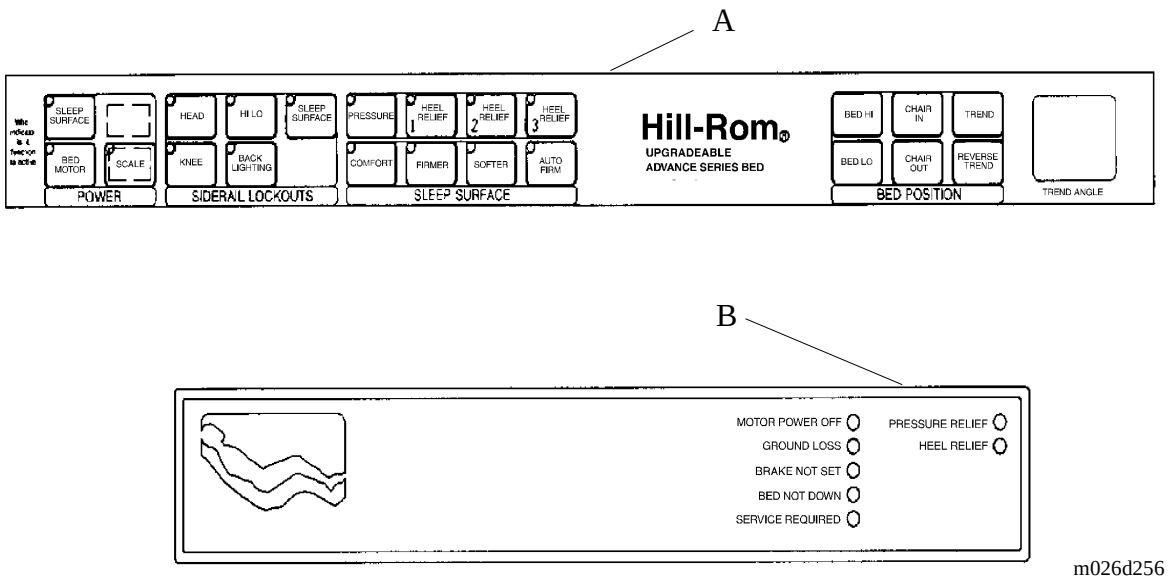
Air Pump

The air pump (C) is part of the air supply module located under the sleep surface seat area. This air pump is powered by 120V AC which is controlled by the air control board. The air pump uses a flow direction valve (D) to direct airflow to inflate and deflate the bladders.

Footboard Control Panel— Advance Series Beds with ZoneAire Sleep Surface (Model 1155 and 1165)

The footboard control panel (A) for the ZoneAire Sleep Surface contains the switches for the bed and sleep surface control (see figure 1-17 on page 1-45). The switches on the footboard control panel are separated into the functional groupings of POWER, SIDERAIL LOCKOUTS, SLEEP SURFACE, and BED POSITION. The information LEDs (B) are visible below the footboard control panel buttons.

Figure 1-17. Footboard Control Panel



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The **POWER** grouping contains the following switches:

- SLEEP SURFACE
- Hidden (unnamed switch)—used for diagnostic purposes
- BED MOTOR
- SCALE—if installed on bed (or hidden if scale is not installed)

The **SIDERAIL LOCKOUT** grouping contains the following switches:

- HEAD
- HI-LO
- SLEEP SURFACE
- KNEE
- BACK LIGHTING

The **SLEEP SURFACE** grouping contains the following mode switches:

- PRESSURE RELIEF (for patients requiring pressure relief)
- HEEL RELIEF 1 (for heel bladder zone 1)
- HEEL RELIEF 2 (for heel bladder zone 2)
- HEEL RELIEF 3 (for heel bladder zone 3)
- COMFORT (for patients not at risk)
- FIRMER (to adjust firmness when in the comfort mode)
- SOFTER (to adjust softness when in the comfort mode)
- AUTO FIRM (to fully inflate all air bladders)

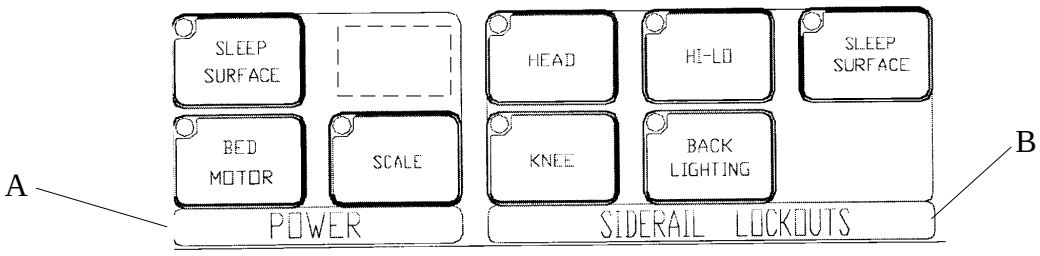
The **BED POSITION** grouping contains the following switches (and the TREND ANGLE indicator):

- BED HI
- CHAIR IN
- TREND (for Trendelenburg)
- BED LO
- CHAIR OUT
- REVERSE TREND (for Reverse Trendelenburg)

Power and Siderail Lockout Switches

The Advance Series Bed power switch (A) is located in the footboard control panel at the foot end of the bed (see figure 1-18 on page 1-46). When the SLEEP SURFACE power switch LED is off, all controls to the sleep surface are disabled.

Figure 1-18. Power and Siderail Lockouts—Scale Beds Shown



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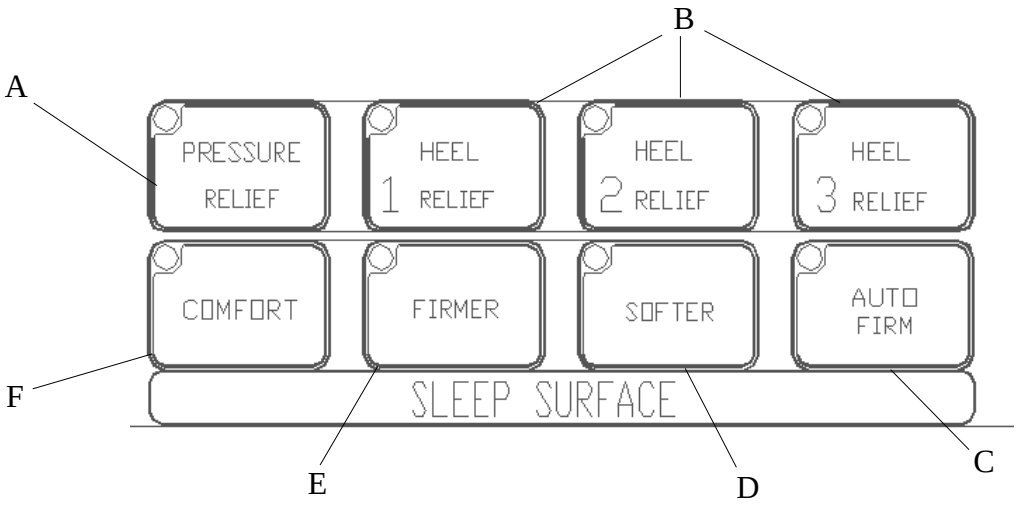
There is a siderail lockout switch (B) for the sleep surface in the nurse control panel. When the SLEEP SURFACE siderail lockout switch LED is lit, all patient controls to the sleep surface are disabled, and the sleep surface is operational **only** from the footboard control panel.

To activate the ZoneAire Sleep Surface, press the SLEEP SURFACE button (A) on the footboard control panel. The LED light on the SLEEP SURFACE button will illuminate, indicating the system is on. The pressure relief information LED illuminates as pressure relief is the default mode.

Modes of Operation

The ZoneAire Sleep Surface has four patient care modes. They are PRESSURE RELIEF (A), HEEL RELIEF (B), AUTO FIRM (C), and COMFORT (F) (see figure 1-19 on page 1-47). The choice of mode is best determined through an assessment of the patient as to his or her risk of pressure ulceration. The caregiver can select the proper mode of operation dependent upon the patient's need.

Figure 1-19. ZoneAire Sleep Surface Mode Switches



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Comfort Mode

For patients assessed not to be at risk, the surface can be placed in the comfort mode. This gives the patient and caregiver control of the firmness or softness of the surface. This is accomplished by the caregiver pressing the COMFORT touch pad control (F) on the footboard control panel.

The firmness/softness of the surface can be controlled by the nurse through the FIRMER (E) and SOFTER (D) touch pad controls on the footboard control panel, or by the patient through the firm and soft buttons on the head end siderails.

The FIRMER (E) switch LED will flash indicating that the surface is at full firm when all six zones have reached the full firm pressure, and the footboard control panel FIRMER switch is pressed.

The SOFTER (D) switch LED will flash indicating that the surface is at full soft when all six zones have reached the full soft pressure, and the footboard control panel SOFTER switch is pressed.

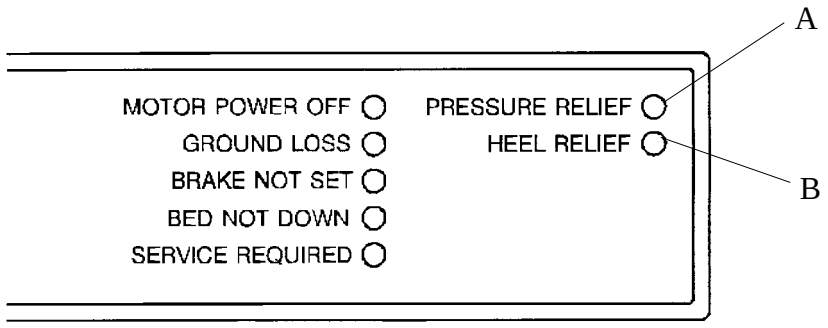
Pressure Relief Mode

For patients assessed to be at risk of ulceration and who require pressure relief, place the surface in the pressure relief mode. The caregiver can accomplish this by pressing the PRESSURE RELIEF (A) touch pad control on the footboard control panel. In the pressure relief mode, the pressure within each zone of the sleep surface is automatically maintained to optimize interface pressure on the patient. Air volumes change to contour the surface around the patient's body, especially bony prominences, to more evenly distribute pressure across the body. The sleep surface adjusts not only to the patient's weight distribution but to patient position and bed articulation.

When in the pressure relief mode, the caregiver and patient **cannot** adjust the firmness or softness of the sleep surface.

When the ZoneAire Sleep Surface is placed in the pressure relief mode, the information indicator PRESSURE RELIEF LED (A) will illuminate, reminding caregivers that the surface is in the pressure relief mode (see figure 1-20 on page 1-48).

Figure 1-20. Information Indicator LEDs on Footboard—Bed Models 1155 and 1165



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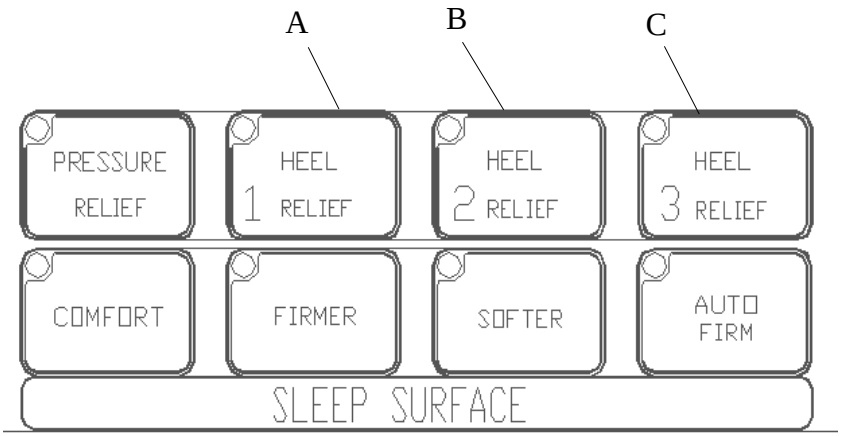
Heel Relief Mode

For patients who are assessed to be at risk of ulceration, require pressure relief and whose level of mobility is such that the patient's heels are at particular risk of ulceration, utilize the heel relief mode. The heel relief mode assists the nurse in managing interface pressure on the heel. Put the ZoneAire Sleep Surface in the pressure relief mode **before** activating the heel relief mode. The patient or nurse **cannot** adjust the firmness or softness of the ZoneAire Sleep Surface while in the heel relief mode.

To determine which heel relief zone to select:

- Observe the patient's heel position relative to the heel indicator labels on both sides of the foot section of the sleep deck frame. These labels indicate heel position and are marked 1, 2, and 3, which correspond to the heel relief zones.
  - If the patient's heels are positioned within the label area marked heel zone 1 at the head end portion of the foot section, press HEEL RELIEF 1 button (A) (see figure 1-21 on page 1-49).

Figure 1-21. ZoneAire Sleep Surface Heel Relief Switches



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  - If the patient's heels are positioned within the label area marked heel zone 2 at the center portion of the foot section, press HEEL RELIEF 2 button (B).
  - If the patient's heels are positioned within the label area marked heel zone 3 at the foot end of the foot portion of the bed, press HEEL RELIEF 3 button (C).

When engaged properly, the heel relief mode will lower the surface under the heels and slightly raise the surface under the calves. This transfers a great percentage of the support of the foot from the heel to the calf and significantly reduces the interface pressure on the heel.

When the patient is moved or rearranged on the ZoneAire Sleep Surface, the caregiver must check the target zone of the heel to ensure the patient's heel is in the original heel zone. The heel relief switches on the attendant control console are color-coordinated with the appropriate heel relief zone label.

The HEEL RELIEF LED (B) located in the information indicator area of the front panel, will be lit when the ZoneAire Sleep Surface is in the heel relief mode (see figure 1-20 on page 1-48).

Auto Firm Mode

The auto firm mode increases the amount of pressure in the ZoneAire Sleep Surface. The auto firm mode will fully inflate all the air bladders in the sleep surface making the surface very firm. The patient's body will no longer displace air from the air bladders but will be raised up by the sleep surface. This allows the caregiver to more easily handle the patient during ambulation, positioning, procedures within the bed, and transfers from the bed.

There are two actions that place the ZoneAire Sleep Surface in the auto firm mode:

- Press the AUTO FIRM button (C) on the footboard control panel (see figure 1-19 on page 1-47). Some situations where the auto firm mode may be appropriate include:
  - Patient ingress/egress
  - Surface-to-surface transfer
  - Patient positioning

NOTE:
This places the ZoneAire Sleep Surface in the auto firm mode for **60** minutes. When this time limit expires, the ZoneAire Sleep Surface returns to its previous mode of operation.

- Activate the CPR release. During CPR the auto firm mode:
  - Creates a firm surface on which to perform CPR
  - Permits easier placement of a backboard under the patient
  - Minimizes compression of the ZoneAire Sleep Surface during CPR

NOTE:
This automatically places the ZoneAire Sleep Surface in the auto firm mode for up to **60** minutes. When this time limit expires, the ZoneAire Sleep Surface returns to its previous mode of operation.

To end the auto firm mode before the time limit expires, perform either of the following actions:

- Press the AUTO FIRM button (C). This action disables the auto firm mode and returns the ZoneAire Sleep Surface to its previous mode of operation.
- Press either the COMFORT button (F) or the PRESSURE RELIEF button (A). This action disables the auto firm mode and places the ZoneAire Sleep Surface in the selected mode.

Bed Scale

General

The Advance Series Bed models P1115, P1116, P1145, P1146, and P1165 feature the bed scale. The scale has five buttons and a display area. Each button is colored and has a graphic symbol. A caption appears below each button describing its function. The scale controls are located at the nurse control panel at the foot end of the bed.

Before Operating Scale

The scale is very sensitive. The most accurate weight reading will be achieved if the bed is not touching anything. This includes the headwall, lines such as pendant controls and ventilators, drainage bags, and anything else that could impact the weight and cause an incorrect weight to appear in the display.

It is important that no one touch the bed while the scale is operating. For example, touching the footboard, even lightly, will add several pounds to the weight display.

New Patient Weighing

The SCALE power switch must be ON, and the bed must be in its weigh position before a patient can be weighed. If the bed is not in its weigh position, the scale display will show four dashes (----) and the message “NOT IN WT POSITION.” The scale buttons will only be active when the bed is in its weigh position.

- If the bed is in Trendelenburg or Reverse Trendelenburg, return it to a flat position. The sleep surface does not need to be completely flat for the scale to work. The head section can be raised up to 40°, and the scale will still operate.

- Use the hilow function to move the bed until the message “NOT IN WT POSITION” disappears from the scale display.

Before placing a new patient on the bed, the sleep surface must be prepared to accurately weigh the patient. This includes placing all pillows, blankets and any other items that the patient will be using on the bed. Place a list of these items near the bedside for future reference.

Zero the Scale

Zero the scale using the following procedure:

1. Press and hold 000.0.
2. “000.0” will flash in the scale display.
3. When “000.0” stops flashing, release the button.
4. “CALC” will flash in the display as the scale zeroes. This can take up to 20 seconds. Do not touch the scale while it is calculating.
5. “CALC” will stop flashing, and a beep will sound when zeroing is complete.
6. “0.0” will appear in the display.

Place the patient on the bed. For the most accurate weight reading, the patient should be centered on the bed and lying still. The scale will automatically calculate and display the patient’s weight. The patient’s weight will remain displayed while the bed is in the weigh position.

Changing the Items On the Bed

During the patient’s stay in the hospital, items will be added to and removed from the bed. To account for the weight of items placed on or taken off of the bed surface without affecting the patient’s weight reading, use the Change Items (C.I.) button.

1. Press and hold the C.I. button until it stops flashing. Release the C.I. button when it stops flashing.
2. The patient’s weight reading will flash. It will be stored in memory while you change items on the bed.
3. Place the item(s) on or remove it from the bed. The function remains active until C.I. is pressed again.
4. When the change is complete, press and release C.I.
5. “CALC” will flash in the display.
6. When “CALC” stops flashing, a beep will sound.

7. The patient's original weight reading will reappear.

Manually Adjusting Displayed Weight

The displayed weight can be manually overridden using the Adjust Weight buttons, "+" and "-." Use the adjust weight feature if an incorrect weight is displayed or if the exact weight of the item being placed on or removed from the bed is known.

For example, if the patient has had a cast put on, you must account for the added weight of the cast. If the weight is not accounted for when the patient is placed back on the bed, the weight reading that is displayed will be incorrect. The scale will display the patient's weight plus the weight of the cast. Use the "-" button to return the display to the patient's original weight.

To use either adjust weight button:

1. Press and hold the appropriate button. . . "+" to increase the weight reading or "-" to decrease the reading.

2. The display will flash a few times. Continue to hold the button.

3. When the display stops flashing, continue holding the button until the display adjusts and the weight reading increases or decreases.

4. When the desired weight is reached, release the button.

5. "CALC" will flash in the display.

6. When "CALC" stops flashing, a beep will sound.

7. The new weight will be displayed.

Turning Weight Display On Or Off

The weight display can be turned on or off through the nurse control panel. This feature allows for patient privacy and deactivates the scale buttons.

1. To turn the weight display off, locate the button labeled SCALE.

2. Press and release the SCALE button.

3. The word "OFF" will appear in the scale display, and the scale buttons will be deactivated.

4. To display the patient's weight reading again, press and release the SCALE button.

The displayed weight can also be removed by moving the bed out of its weigh position. When you do this, "----" and the message "NOT IN WT POSITION" will appear in the display.

Weigh Position

The Advance Series Bed has two weigh options. In the high position, the bed is raised all the way up. In the low position, the bed is about 2" (51 mm) above its lowest point. Only one position can be active at a time.

When you receive the Advance Series Bed with in-bed scale, the lower weigh position will be active. It is possible to change to the higher weigh position.

NOTE:
Change weigh position only with an empty bed.

To change weigh positions, either from low position to high, or high to low:

1. Place the bed in its current weigh position. Use the hilow function as needed.
2. Press and hold 000.0 button.
3. "000.0" will flash in the scale display.
4. When "000.0" stops flashing, keep holding the button.
5. Press the "-" button.
6. Release the 000.0 button and the "-" button.
7. "----" and "NOT IN WT POSITION" will appear in the scale display.
8. Move the bed to the other weigh position using the hilow function.
9. "NOT IN WT POSITION" will disappear from the display when weigh position is achieved.
10. The bed will automatically zero itself (see "Zero the Scale" on page 1-53).

Safety Tips

Before Operating

Before operating the Advance Series Bed, be sure that you have read and understand in detail the contents of this manual. It is important that you read and strictly adhere to the aspects of safety immediately following.

Any reference to a side of the bed is from the patient's view lying in the bed on his/her back.

We urge you to incorporate these safety tips into your procedures for the safety of both patients and staff.

SHOCK HAZARD:

The potential for electrical shock exists with electrical equipment. Establish policies and procedures to train and educate your staff on the risks associated with electric equipment.

SHOCK HAZARD:

Unplug the bed from its power source. Failure to do so could result in personal injury or equipment damage.

SHOCK HAZARD:

Do not expose the bed to excessive moisture. Personal injury or equipment damage could occur.

SHOCK HAZARD:

High voltage is present. Use extreme care, or personal injury could occur.

SHOCK HAZARD:

Unplug the unit from its power source. Failure to do so could result in personal injury or equipment damage.

SHOCK HAZARD:

Do not expose the unit to excessive moisture. Personal injury or equipment damage could occur.

WARNING:
Secure the mattress and frame while removing the dust cover. Failure to do so could result in personal injury.

WARNING:
Do not use the Advance Series Bed in the presence of flammable gas or vapors. A fire and explosion hazard in this environment exists as a result of equipment operation.

WARNING:
Do not allow personnel to have their entire body below the sleep surface and within the confines of the bed. Personal injury could occur.

WARNING:
Do not work under an unsupported load. Install appropriate temporary supports. Failure to do so could result in personal injury or equipment damage.

WARNING:
Only facility-authorized maintenance personnel should troubleshoot the Advance Series Bed. Troubleshooting by unauthorized personnel could result in personal injury or equipment damage.

WARNING:
Only facility-authorized maintenance personnel should perform preventive maintenance on the Advance Series Bed. Preventive maintenance performed by unauthorized personnel could result in personal injury or equipment damage.

WARNING:
To prevent tripping, bend in the cane bumper to be in an upward position. Personal injury could result.

WARNING:
Tie the foot section back toward the head section when preparing to remove the foot end cover. Failure to tie the foot section back can allow the foot section to fall, causing personal injury or equipment damage.

WARNING:
Unplug the bed from its power source before inserting the IV rod for manual operation. Unexpected resumption of power can cause the IV rod to rotate and cause injury.

WARNING:
Remove the IV rod before plugging the bed into an appropriate power source. Resumption of power can cause the IV rod to rotate and cause injury.

WARNING:
Only qualified service personnel should use test equipment on the Advance Series Bed. Before using the test equipment on the Advance Series Bed, be sure that you have read and understand the information under “Test Equipment”.

WARNING:
Refer to your VOM owner’s manual for complete and detailed information regarding the operation of your VOM. Personal injury can occur.

WARNING:
Unplug the bed from its power source before checking ohms/resistance measurements. Failure to disconnect line voltage to the bed can cause personal injury and damage the VOM.

WARNING:
Use a 2 x 4 to support the head end of the bed when removing or adjusting the hilow head screw assembly. The head end of the bed will fall during this procedure if it is not supported. Personal injury or equipment damage can result.

WARNING:
Use a 2 x 4 to support the head end of the bed when removing or adjusting the head limit switch assembly. The head end of the bed will fall during this procedure if it is not supported. Personal injury or equipment damage can result.

WARNING:
Use a 2 x 4 to support the foot end of the bed when removing the foot screw assembly. The foot end of the bed will fall during this procedure if it is not supported. Personal injury or equipment damage can result.

WARNING:
Unplug the bed from its power source before laying the bed on its side. Switches may become activated, causing the bed to operate without warning and cause personal injury.

WARNING:
To avoid injury, get additional help to lay the bed over on its side.

WARNING:
To avoid injury, get additional help to turn the bed onto its casters.

WARNING:
Use jack stands to support the weight of the bed when removing and installing the load cell. If jack stands are not used, the bed can fall, causing personal injury and damage to the bed.

WARNING:
Unplug the bed from its power source before removing the bolts connecting the load cell to the base frame. Switches may become activated, causing the bed to operate without warning and cause personal injury.

WARNING:
Follow the product manufacturer's instructions. Failure to do so could result in personal injury or equipment damage.

CAUTION:
Unplug the bed from its power source. If the bed is not unplugged, a power surge can damage the scale unit.

CAUTION:
Ensure that hands are clean, and handle the P.C. boards by their edges **only** to prevent component damage. Wear an appropriate static strap when working with electronics. Equipment damage can occur. See "P.C. Boards" on page 6-4 for additional information.

CAUTION:
Place the removed P.C. boards in anti-static protective bags for shipping and storage. Equipment damage can occur.

CAUTION:
Do not jump more than one function at the same time. Jumping more than one function at the same time can cause possible damage to the logic control P.C. board.

CAUTION:
Do not disassemble the footboard control panel on the mattress of the bed. Ensure that you are at a static-free workstation and that you are wearing the anti-static wrist strap. Ensure that the anti-static wrist strap and workstation are properly grounded. Failure to follow these directions can cause damage to the electronics in the footboard control panel.

CAUTION:
Do not remove the footboard control panel for normal cleaning. If fluid is spilled in the footboard control panel area, unplug the bed from its power source. Thoroughly dry the electrical connections for the footboard control panel before plugging the bed into its power source. Equipment damage could occur.

CAUTION:
Do not use harsh cleaners, solvents, or detergents. Equipment damage could occur.

CAUTION:
Do not use silicone-based lubricants. Equipment damage could occur.

CAUTION:
Do not cut or scar the brass fitting on the DynamicAire Sleep Surface compressor (new style). This can cause an excessive air loss (and turn on the service required LED).

CAUTION:
Attach the large air hose to the DynamicAire Sleep Surface compressor (new style) with a cable tie. This will help prevent the hose from coming off during operation causing equipment damage.

CAUTION:
Use caution when removing the five air hoses from the DynamicAire Sleep Surface solenoid (new style). The fittings are plastic and can break if abused during the removal process.

CAUTION:
Do not cut or scar the brass fitting on the ZoneAire Sleep Surface compressor (new style). This can cause an excessive airloss (and turn on the service required LED).

CAUTION:
Use caution when removing the air hoses from the ZoneAire Sleep Surface solenoid (new style). The fittings are plastic and can break if abused during the removal process.

CAUTION:
Attach the large air hose to the ZoneAire Sleep Surface compressor with a cable tie. This will help prevent the hose from becoming unattached during operation which can cause equipment damage.

CAUTION:
Gently spread the top opening of the footboard control panel when removing the nurse control panel. This will help prevent J/P51 from catching and causing damage to the flex strip during removal.

CAUTION:
Ensure that the flex circuit to the nurse control panel switch is not damaged when removing the old switch and installing the new switch. Overheating the flex circuit will cause delamination, resulting in a shorted or open circuit condition.

CAUTION:
Do not over-tighten the footboard control panel switch retaining nut during installation of the nurse control panel switch. Over-tightening the nut will cause the switch to not operate properly.

CAUTION:
Align the switch slide and the head limit switch after servicing the head screw assembly. Ensure that the CPR latch assembly properly actuates the limit switch. Damage to the bed can occur.

CAUTION:
Failure to align the limit switch slide and the drive boots when installing the hilow head drive screw can cause severe damage to the bed.

CAUTION:
Failure to align the limit switch slide and the drive boots when installing the hilow foot drive screw can cause severe damage to the bed.

CAUTION:
Do not attach the footboard control panel to the bed if the bed is plugged into its power source. Damage can occur to the electronics in the footboard control panel.

CAUTION:
Do not switch the footboard control panels between the 3-motor and 4-motor Advance Series Beds. Equipment damage can occur.

CAUTION:
Do not lower the foot section from the folded up position with the knee section down and the foot end cover removed. Severe damage to the bed can occur.

CAUTION:
Do not cut or score into the male fittings when removing the air hose from the DynamicAire Sleep Surface P.C. board. Cutting down into the fittings can cause damage and excessive airloss.

CAUTION:
Failure to align the limit switch slide and the drive boots when installing the hilow head limit switch can cause severe damage to the bed.

CAUTION:
Failure to align the limit switch slide, automatic contour switch, and drive boots when installing the knee screw assembly can cause severe damage to the bed.

CAUTION:
Align the limit switch slide and the head limit switch after installing the limit switch package. Ensure that the CPR latch assembly properly actuates the limit switch. Damage to the bed can occur.

CAUTION:
Do not over-tighten the limit switch mounting screws. Over-tightening the mounting screws can cause the limit switches to operate improperly.

CAUTION:
Do not activate the CPR release to manually lift the head section. If you do, the head section may not elevate properly until you manually reset it. If this occurs, see “Head Section” on page 4-9. Damage to the bed can occur when the head section is not properly reset if manually lifted using the CPR release.

CAUTION:
Crank the head screw assembly clockwise **only**. The actuator on the limit switch and the lift nut can become damaged if you crank the head screw assembly counterclockwise.

CAUTION:
Do not manually crank any of the drive screw assemblies past the low or high limits. Damage can occur to the individual drive screw if this occurs.

CAUTION:
Do not remove the footboard control panel for normal cleaning. If fluid is spilled in the footboard control panel area, unplug the bed from its power source. Thoroughly dry the electrical connections for the footboard control panel before plugging the bed into its power source. Equipment damage can occur.

CAUTION:
Unplug the bed from its power source before removing or installing the footboard control panel. Damage can occur to the electronics in the footboard control panel during removal or installation if the bed is plugged into its power source.

CAUTION:
If your bed is equipped with the bed exit system, do not pull on the bed exit tape switches. Damage can occur to the bed exit tape switches.

CAUTION:
Fuse F2 (T, 2.0A, 250V, IEC127-3) provides protection for the power supply and the air module.

CAUTION:
Fuse F1 protects the transformer primary and is necessary for UL544 approval.

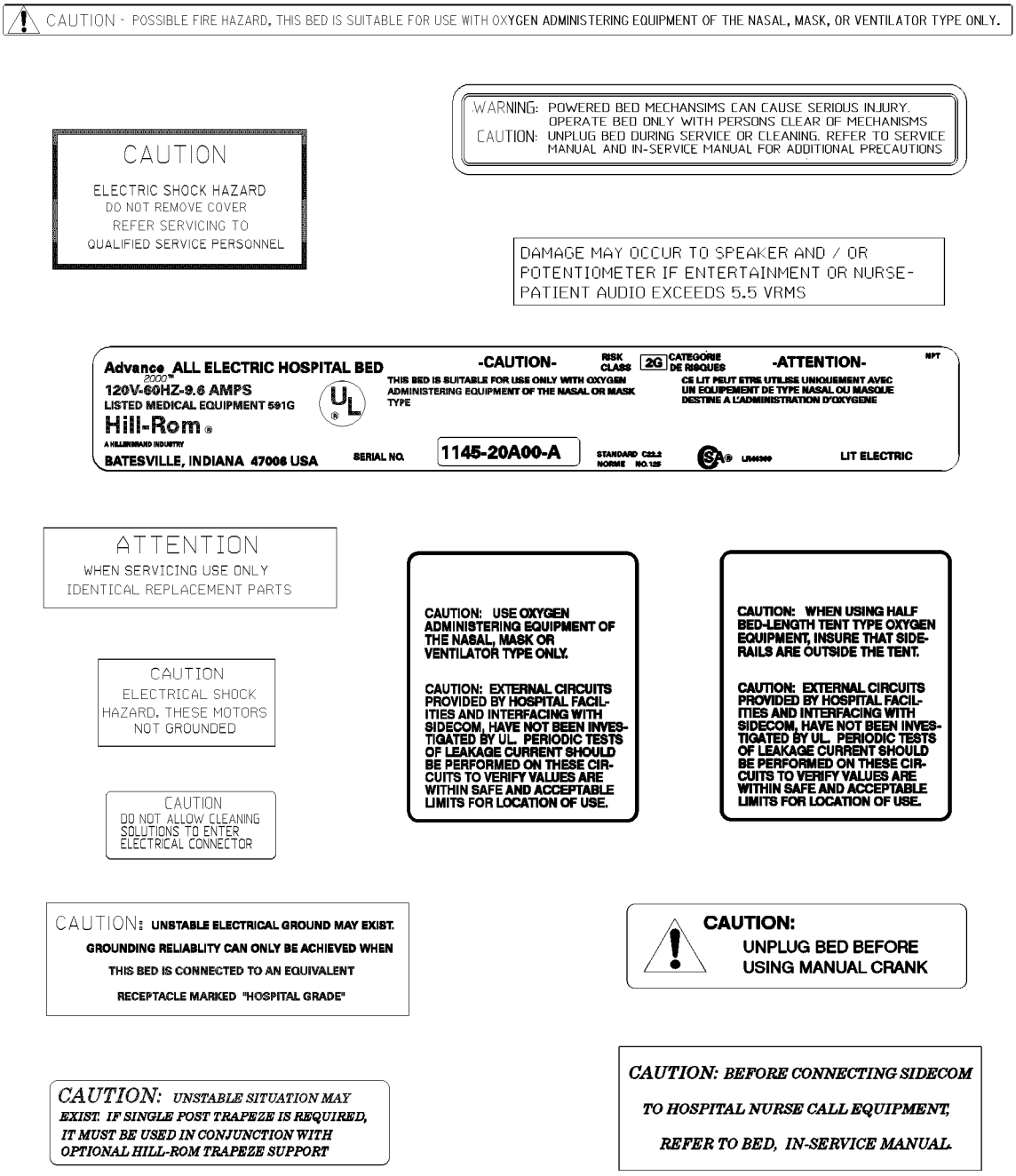
CAUTION:
Be careful not to damage the control cables when removing them from the footboard control panel.

CAUTION:
Do not use solutions such as turpentine, paint or lacquer thinner, etc. to clean the caster. This deteriorates the caster life and performance.

CAUTION:
Check the color of the actuator on the new and old nurse control switch. Ensure they are the same. Damage to the bed can result.

Warning and Caution Labels

Figure 1-22. Warning and Caution Labels


CAUTION - POSSIBLE FIRE HAZARD, THIS BED IS SUITABLE FOR USE WITH OXYGEN ADMINISTERING EQUIPMENT OF THE NASAL, MASK, OR VENTILATOR TYPE ONLY.
WARNING: POWERED BED MECHANSIMS CAN CAUSE SERIOUS INJURY. OPERATE BED ONLY WITH PERSONS CLEAR OF MECHANISMS
CAUTION: UNPLUG BED DURING SERVICE OR CLEANING. REFER TO SERVICE MANUAL AND IN-SERVICE MANUAL FOR ADDITIONAL PRECAUTIONS
CAUTION
ELECTRIC SHOCK HAZARD
DO NOT REMOVE COVER
REFER SERVICING TO
QUALIFIED SERVICE PERSONNEL
DAMAGE MAY OCCUR TO SPEAKER AND / OR POTENTIOMETER IF ENTERTAINMENT OR NURSE-PATIENT AUDIO EXCEEDS 5.5 VRMS
Advance 2000™ ALL ELECTRIC HOSPITAL BED
120V-60HZ-9.6 AMPS
LISTED MEDICAL EQUIPMENT 591G
Hill-Rom
A HILLENBRAND INDUSTRY
BATESVILLE, INDIANA 47006 USA
-CAUTION-
THIS BED IS SUITABLE FOR USE ONLY WITH OXYGEN ADMINISTERING EQUIPMENT OF THE NASAL OR MASK TYPE
RISK CLASS 2G
CATEGORIE DE RISQUES
-ATTENTION-
CE LIT PEUT ETRE UTILISE UNIQUEMENT AVEC UN EQUIPEMENT DE TYPE NASAL OU MASQUE DESTINE A L'ADMINISTRATION D'OXYGENE
NPT
SERIAL NO. 1145-20A00-A
STANDARD C22.2 NORME NO.125
LIT ELECTRIC
ATTENTION
WHEN SERVICING USE ONLY
IDENTICAL REPLACEMENT PARTS
CAUTION: USE OXYGEN ADMINISTERING EQUIPMENT OF THE NASAL, MASK OR VENTILATOR TYPE ONLY.
CAUTION: EXTERNAL CIRCUITS PROVIDED BY HOSPITAL FACILITIES AND INTERFACING WITH SIDECOM, HAVE NOT BEEN INVESTIGATED BY UL. PERIODIC TESTS OF LEAKAGE CURRENT SHOULD BE PERFORMED ON THESE CIRCUITS TO VERIFY VALUES ARE WITHIN SAFE AND ACCEPTABLE LIMITS FOR LOCATION OF USE.
CAUTION: WHEN USING HALF BED-LENGTH TENT TYPE OXYGEN EQUIPMENT, INSURE THAT SIDERAILS ARE OUTSIDE THE TENT.
CAUTION: EXTERNAL CIRCUITS PROVIDED BY HOSPITAL FACILITIES AND INTERFACING WITH SIDECOM, HAVE NOT BEEN INVESTIGATED BY UL. PERIODIC TESTS OF LEAKAGE CURRENT SHOULD BE PERFORMED ON THESE CIRCUITS TO VERIFY VALUES ARE WITHIN SAFE AND ACCEPTABLE LIMITS FOR LOCATION OF USE.
CAUTION
ELECTRICAL SHOCK HAZARD. THESE MOTORS NOT GROUNDED
CAUTION
DO NOT ALLOW CLEANING SOLUTIONS TO ENTER ELECTRICAL CONNECTOR
CAUTION: UNSTABLE ELECTRICAL GROUND MAY EXIST. GROUNDING RELIABLITY CAN ONLY BE ACHIEVED WHEN THIS BED IS CONNECTED TO AN EQUIVALENT RECEPTACLE MARKED "HOSPITAL GRADE"
CAUTION:
UNPLUG BED BEFORE USING MANUAL CRANK
CAUTION: UNSTABLE SITUATION MAY EXIST. IF SINGLE POST TRAPEZE IS REQUIRED, IT MUST BE USED IN CONJUNCTION WITH OPTIONAL HILL-ROM TRAPEZE SUPPORT
CAUTION: BEFORE CONNECTING SIDECOM TO HOSPITAL NURSE CALL EQUIPMENT, REFER TO BED, IN-SERVICE MANUAL.

m026d080

Chapter 2
Troubleshooting Procedures

2

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NOTES:

Getting Started

General Troubleshooting Hints

WARNING:
Only facility-authorized maintenance personnel should troubleshoot the Advance Series Bed. Troubleshooting by unauthorized personnel could result in personal injury or equipment damage.

Begin each procedure in this chapter with step 1. Follow the sequence outlined (each step assumes the previous step has been completed). In each step, the normal operation of the product can be confirmed by answering **Yes** or **No** to the statement. Your response will lead to another step in the procedure, a repair analysis procedure (RAP), or component replacement. If more than one component is listed, replace them in the given order.

Start with **Initial Actions** to begin gathering information about the problem.

Perform the **Function Checks** to isolate or identify a problem and to verify the repair after completing each corrective action (replacing or adjusting a part, seating a connector, etc.).

Perform the **Final Actions** after the **Function Checks** to verify the repair.

If troubleshooting procedures do not isolate the problem, call Hill-Rom Technical Support at (800) 445-3720 for assistance.

Initial Actions

Use Initial Actions to gather information from operators concerning problems with the Advance Series Bed. Note symptoms or other information concerning the problem that the operator identifies. This information helps identify the probable cause.

1. Someone who can explain the problem is available.

   Yes ↓ **No** → Go to “Function Checks” on page 2-7.

2

2. Ask that person to demonstrate or explain the problem. The problem can be duplicated.

   Yes **No**
   ↓ → Go to"Function Checks" on page 2-7.

3. The problem is a result of improper operator action.

   Yes **No**
   ↓ → Go to"Function Checks" on page 2-7.

4. Instruct the operator to refer to the procedures in the *Advance Series Bed In-Service Manual*. Perform the "Function Checks" on page 2-7 to ensure proper operation of the system.

NOTE:
Analyze the Advance Series Bed error codes by referring to table 2-1 on page 2-12.

Function Checks

Mechanical Subsystem Troubleshooting

1. **Initial Actions** have been performed.

   Yes **No**
   ↓ → Perform “Initial Actions” on page 2-5.

2. Operate the bed’s electrical controls while observing the mechanical parts for evidence of damaged components. The mechanical parts are operating correctly.

   Yes **No**
   ↓ → Remove, replace, and adjust (if necessary) the damaged component(s).

3. Operate the bed’s electrical controls while listening for evidence of damage to the mechanical components. The mechanical parts are operating correctly without unusual noise.

   Yes **No**
   ↓ → Remove, replace, and adjust (if necessary) the damaged component(s).

4. Go to “Final Actions” on page 2-21.

Electrical Subsystem Troubleshooting

Use the following isolation sequence for identifying the malfunctioning component in the electrical subsystem:

1. **Initial Actions** have been performed.

   Yes **No**
   ↓ → Perform “Initial Actions” on page 2-5.

2. The bed is plugged into an appropriate power source.

   Yes **No**
   ↓ → Plug the bed into an appropriate power source.

2

3. Activate the siderail controls and determine if the problem resides in one or both siderails. The malfunction occurs when either siderail is activated.

   Yes **No**
   ↓ → Check for a defective function switch on the switch p.c. board assembly, and/or a damaged connection between the switch p.c. board assembly and the testport cable assembly. Remove, replace, and adjust (if necessary) the damaged component(s).

   This solves the problem.

   Yes **No**
   ↓ → Go to step 5.

4. Go to "Final Actions" on page 2-21.

5. Isolate each siderail to determine if one is affecting the other. Do this by alternately unplugging each siderail at the testport cable assembly and operating the connected siderail switches. The bed functions correctly with one siderail connected, but not the other.

   Yes **No**
   ↓ → Go to step 8.

6. If the bed functions correctly with one siderail connected to the testport cable assembly (but not the other), check the disconnected siderail for a switch failed in the closed position, a wire shorted to ground, and/or a damaged switch p.c. board assembly. Remove, replace, and adjust (if necessary) the damaged component(s).

   This solves the problem.

   Yes **No**
   ↓ → Go to step 8.

7. Go to "Final Actions" on page 2-21.

8. Determine if the footboard assembly is the cause of the malfunction by replacing it with a known good footboard, and activating the switches. The bed operates correctly.

   Yes **No**
   ↓ → Go to step 10.

   This solves the problem.

   Yes **No**
   ↓ → Go to step 10.

9. Go to "Final Actions" on page 2-21.

10. If the fault was not located using the steps above, it will be necessary to use test equipment to isolate the malfunctioning component (see “Test Equipment” on page 2-22).

Pneumatic Subsystem Troubleshooting

The pneumatic subsystem is comprised of the following five components:
- Bladders, both the top and lower
- Hoses and hose fittings
- Air P.C. board
- Solenoids and valves
- Compressor

1. **Initial Actions** have been performed.

   Yes **No**
   ↓ → Perform “Initial Actions” on page 2-5.

2. The bed is plugged into an appropriate power source.

   Yes **No**
   ↓ → Plug the bed into an appropriate power source.

3. The air system (SLEEP SURFACE) POWER switch is turned on. If the membrane type footboard is installed, ensure that the SLEEP SURFACE LOCKOUT switch is not engaged (mattress sleep surface is not locked out).

   Yes **No**
   ↓ → Turn the air system (SLEEP SURFACE) POWER switch on. If membrane type footboard is installed, check that the SLEEP SURFACE LOCKOUT switch LED is not lit.

4. The electrical connections are secure.

   Yes **No**
   ↓ → Securely connect all electrical cables.

5. The pneumatic hose connections are tight, and the coupling O-rings are not damaged.

   Yes **No**
   ↓ → Replace damaged O-rings and ensure that all pneumatic hose connections are tight.

6. Refer to the repair and analysis procedures in this chapter to isolate the problem if the preceding checks do not correct the problem.

NOTE:
If the excessive air loss LED is on, reset the air system before you can start troubleshooting using table 2-1 on page 2-12. To do this, turn the air system (SLEEP SURFACE) POWER switch off, then back on.

2

ZoneAire Sleep Surface Tests

There are three types of diagnostic tests that can be run on the ZoneAire Sleep Surface. These tests are the footboard control panel switch/LED test, the air system self-diagnostic test, and the air system independent diagnostic test.

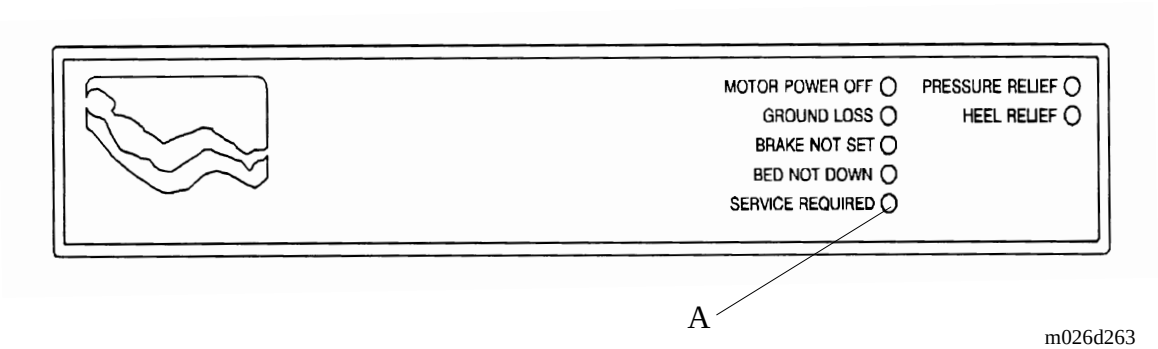
During the air system diagnostic tests the ZoneAire Sleep Surface automatically checks each component. If the system does not operate properly, refer to “Service Required LED” on page 2-11, “Footboard Control Panel Switch/LED Test” on page 2-14, “Air System Self Diagnostic Test” on page 2-17, and “Air System Independent Diagnostic Test” on page 2-19.

NOTE:
When a diagnostic function test is active, all other control functions are disabled.

Service Required LED

The SERVICE REQUIRED LED (A) is located on the footboard control panel and provides an alarm system to indicate that service is required (see figure 2-1 on page 2-11).

Figure 2-1. Indicator LEDs Outside of the Footboard Control Panel Cover



The SERVICE REQUIRED LED (A) flashes two different signals: a long flash and a short flash. You can determine the area that requires servicing by noting the different **flashes** (blinks). Observe the length of the LED flashes, and count the number of times each flash occurs. To decode the service required signals, refer to table 2-1 on page 2-12, and compare the flashes to those listed. The area that requires service, possible cause, and corrective action is indicated.

2

Table 2-1. Service Required LED Flash Codes

Number of Long Flashes	Number of Short Flashes	Indicated Fault	Possible Cause	Corrective Action
1	2	Stuck key	Defective key panel. Defective footboard interface P.C. board	Replace the key panel. Replace the footboard interface P.C. board.
1	3	Changed product number	Footboard has been moved to a different bed. Defective scale system (if installed), or defective system in the ZoneAire Sleep Surface.	Perform “Soft Reset” on page 2-20 to configure the control. Repair the defective system.
1	4	Shorted input bus	Defective footboard interface P.C. board.	Replace the defective interface P.C. board.
2	1	Slow leak	Loose hose, hole in air bladder, etc.	Locate the cause of the leak, and correct as necessary. See “ZoneAire Sleep Surface Slow Leak—Error Code 2-1” on page 2-55.
2	2	Continuous run error, or possible faulty flow direction valve.	The air compressor runs continuously for more than 10 minutes.	Determine the cause (see “ZoneAire Sleep Surface Continuous Run—Error Code 2-2” on page 2-56).
2	3	Triac short error	Triac shorted.	Determine the cause of short, and replace the valve (see “ZoneAire Sleep Surface Triac Short—Error Code 2-3” on page 2-59).
2	4	EEPROM error	Shorted or open communication line between control circuit and pressure sensing circuit.	Determine the cause of shorted or open line (see “ZoneAire Sleep Surface Sensor EEPROM—Error Code 2-4” on page 2-60).
2	5	Mattress connection error	Electrical connection between the control circuit and the pressure sensing circuit is disconnected.	Reconnect the harness (see “ZoneAire Sleep Surface Mattress Disconnected—Error Code 2-5” on page 2-62).

Number of Long Flashes	Number of Short Flashes	Indicated Fault	Possible Cause	Corrective Action
2	6	Loss of power error	Blown fuse, triac open.	Determine the cause and correct (see “ZoneAire Sleep Surface Triac Open—Error Code 2-6” on page 2-67).
2	7	Footboard control panel error	Footboard control panel disconnected. Defective network cable. Defective system in the ZoneAire Sleep Surface.	Connect the panel (see “Footboard Control Panel” on page 4-11). Repair or replace the defective cable. Repair or replace the defective system (see “ZoneAire Sleep Surface Does Not Work” on page 2-78).
4	4	Bed position output failure	Defective bed position output on the footboard interface P.C. board.	Reboot the electronics in the footboard control panel by performing a soft reset (see “Soft Reset” on page 2-20). If the fault still occurs, replace the footboard membrane interface P.C. board.

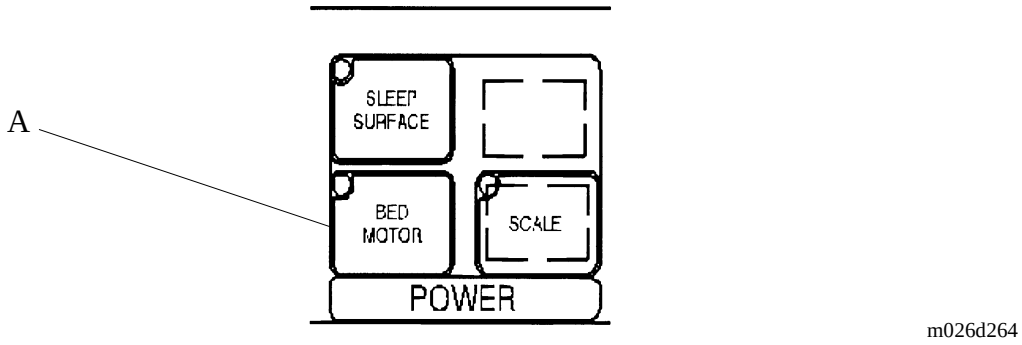
2

Footboard Control Panel Switch/LED Test

This test allows you to check for proper operation of the footboard control panel switches (their LED lights) and the LED indicators located outside of the console cover.

1. To conduct this test, the bed's motor power must be off—MOTOR POWER OFF LED (B) on the control panel to be illuminated (see figure 2-2 on page 2-14). Press the BED MOTOR switch (A) to turn off the motor power if necessary.

Figure 2-2. Bed Motor Power Off Switch and Information LED



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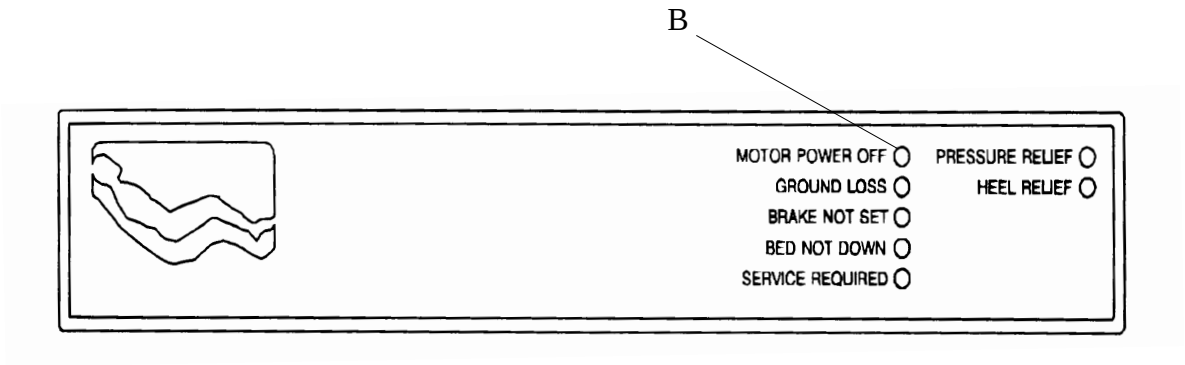

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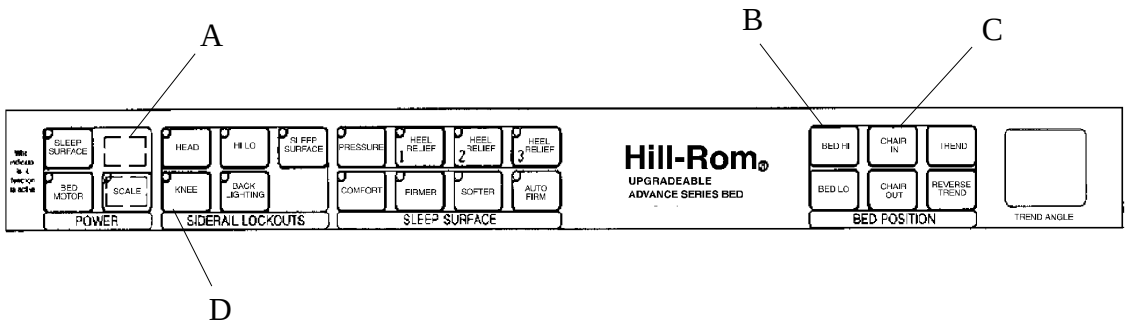
NOTE:
If scale option is not installed, the SCALE switch will not be labeled—it will be a hidden switch similar to the one illustrated next to the SLEEP SURFACE switch.

2. To activate the control panel switch/LED test:

   c. Press and **hold** the unlabeled switch (A) and the SCALE switch (D) with one hand—with the other hand press the BED HI switch (B) and the CHAIR IN switch (C) and **hold** for 4 seconds (see figure 2-3 on page 2-15). Release the depressed switches.

NOTE:
If the scale option is not installed, the SCALE switch (D) will not be labeled.

Figure 2-3. Footboard Control Panel Switch/LED Indicator Test



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3. Press each of the switches indicated in table 2-2 on page 2-16, and confirm that its LED, plus the corresponding information LED indicator named in the table, illuminates (when appropriate).

NOTE:
If a switch closure is not detected during any 5 second period, this test will end, and the footboard control panel will return to its previous state.

2

Table 2-2. Footboard Control Panel Switch/LED Indicator Test

Pressing This Button on the Control Panel (Area)	Lights This LED Indicator Outside the Console Cover
SLEEP SURFACE (POWER)	MOTOR POWER OFF LED indicator
Hidden-no LED (POWER)	GROUND LOSS LED indicator
HEAD (siderail lockout)	BRAKE NOT SET LED indicator
HI-LO (siderail lockout)	BED NOT DOWN LED indicator
SLEEP SURFACE (siderail lockout)	SERVICE REQUIRED LED indicator
PRESSURE RELIEF (sleep surface)	PRESSURE RELIEF LED indicator
HEEL RELIEF 1 (sleep surface)	HEEL RELIEF LED indicator
HEEL RELIEF 2 (sleep surface)	None
HEEL RELIEF 3 (sleep surface	None
BED HI (bed position)	MOTOR POWER OFF LED indicator
REVERSE TREND IN (bed position)—3-motor CHAIR IN (bed position)—4-motor	GROUND LOSS LED indicator
TREND IN (bed position)—3-motor TREND (bed position)—4-motor	BRAKE NOT SET LED indicator
BED MOTOR (power)	None
SCALE—if installed (power) Hidden—if no scale (power)	None
KNEE (siderail lockout)	None
BACK LIGHTING (siderail lockout)	None
COMFORT (sleep surface)	None
FIRMER (sleep surface)	None
SOFTER (sleep surface)	None
AUTO FIRM (sleep surface)	None
BED LO (bed position)	MOTOR POWER OFF LED indicator
REVERSE TREND OUT (bed position)—3-motor CHAIR OUT (bed position)—4-motor	GROUND LOSS LED indicator
TREND OUT (bed position)—3-motor REVERSE TREND (bed position)—4-motor	BRAKE NOT SET LED indicator

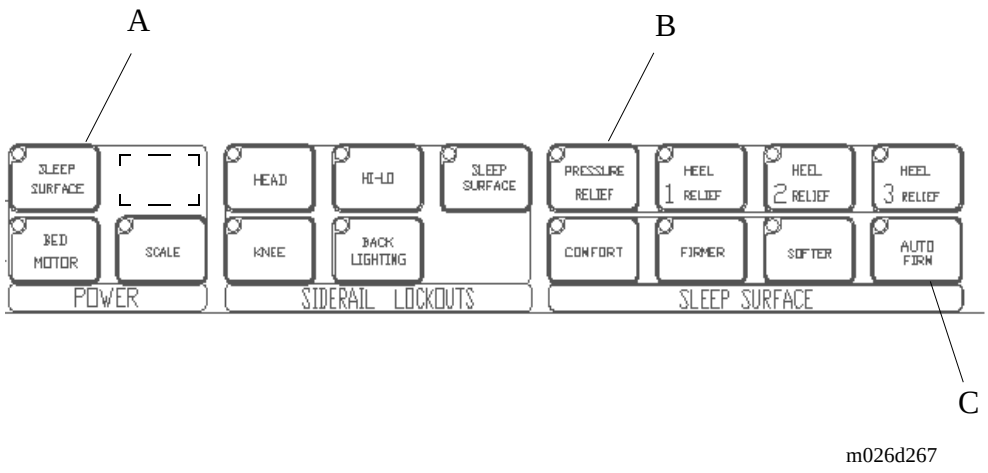
Air System Self Diagnostic Test

This diagnostic test allows the bed to automatically check each component of the ZoneAire Sleep Surface, and determine if power is being applied. There are eight LED indicators that are used for the diagnostic testing. These eight indicators represent different areas of the sleep surface. The footboard control panel will display a **flashing** LED to indicate any improperly functioning area during this self diagnostic test.

The ZoneAire Sleep Surface system must be off when you run this test.

1. If necessary, press the SLEEP SURFACE power switch (A) on the footboard control panel to turn the system off (see figure 2-4 on page 2-17). All LED indicators and the service required information LED go out.

Figure 2-4. Control Panel Sleep Surface Switches—Self Diagnostic Test



2. Press the PRESSURE RELIEF switch (B) and the AUTO FIRM switch (C) simultaneously, and hold for about 4 seconds.

   Listen closely for an audible click.

   The LED for the SLEEP SURFACE switch (A) should be flashing. Release all switches.

3. The self diagnostic procedure will take about 15 seconds. When this test is completed, all eight LED indicators in the sleep surface area of the footboard control panel should be **constantly on** (not flashing) for about 4 seconds.

4. If any of the eight LED indicators for the sleep surface are **flashing**, refer to table 2-3 on page 2-18 for the inoperative area of the ZoneAire Sleep Surface.

Table 2-3. Diagnostic Tests Fault Codes

Sleep Surface LED Indicator	Indicated Function That is Faulty
PRESSURE RELIEF	Head solenoid driver on the air board
HEEL RELIEF 1	Seat solenoid driver on the air board
HEEL RELIEF 2	Knee solenoid driver on the air board
HEEL RELIEF 3	Heel relief 1 solenoid driver on the air board
COMFORT	Heel relief 2 solenoid driver on the air board
FIRMER	Heel relief 3 solenoid driver on the air board
SOFTER	Air compressor driver on the air board
AUTO FIRM	Direction flow valve driver on the air board

2

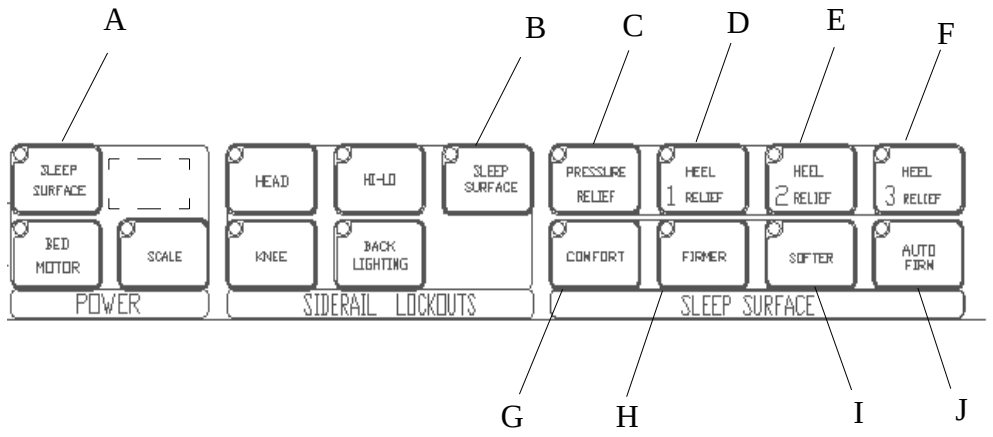
Air System Independent Diagnostic Test

This diagnostic test allows service personnel to check each component of the ZoneAire Sleep Surface separately. There are eight LED indicators that are used for this diagnostic testing. These eight indicators represent different areas of the sleep surface. The footboard control panel will display a **constant on** LED to indicate any improperly functioning area during this diagnostic test.

The ZoneAire Sleep Surface system must be off when you run this test.

1. If necessary, press the SLEEP SURFACE power switch (A) on the footboard control panel to turn the system off (see figure 2-5 on page 2-19). All LED indicators and the SERVICE REQUIRED LED go out.

Figure 2-5. Control Panel Sleep Surface Switches—Independent Diagnostic Test



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2. Press and hold the SLEEP SURFACE siderail lockout switch (B).

   Listen closely for an audible click.

3. Press each of the eight SLEEP SURFACE switches (C through J) one at a time, and observe the LED for the activated switch.

4. If any of the eight LED indicators for the sleep surface are **constant on** (not flashing), refer to table 2-3 on page 2-18 for the inoperative area of the ZoneAire Sleep Surface.

Soft Reset

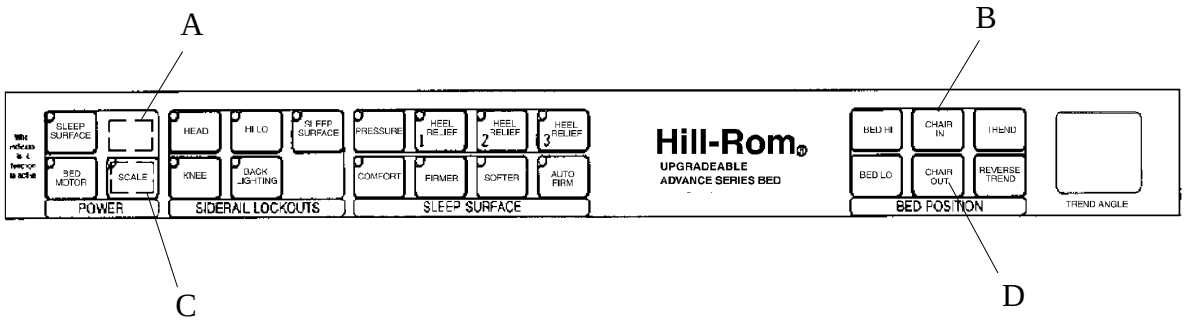
The control board in the ZoneAire Sleep Surface footboard control panel can sense the features on the bed in which it is installed. Although it may perform the necessary functions, it will emit a specific service required alarm error code (one long, three short flashes) as listed in table 2-1 on page 2-12 if configured wrong. The soft reset is used to reboot the electronics in the front panel when a footboard control panel configuration error occurs. The soft reset indicates to the control board to sense the features on the bed and configure itself for those features.

1. If necessary, press the BED MOTOR power switch on the footboard control panel to turn the bed motor off. The MOTOR POWER OFF LED will illuminate.

2. Press and **hold** the unlabeled switch (A) and the SCALE switch (C) with one hand—with the other hand press the CHAIR IN switch (B) and CHAIR OUT switch (D), and **hold** for 2 seconds. Then, release all switches (see figure 2-6 on page 2-20).

NOTE:
If the scale option is not installed, the SCALE switch (C) will not be labeled.

Figure 2-6. Soft Reset—4-Motor Advance Series Beds



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3. Press the BED MOTOR power switch on the footboard control panel to turn the bed motor on. The MOTOR POWER OFF LED will go off.

4. This completes the soft reset procedures.

Final Actions

1. Complete the required preventive maintenance procedures. See “Preventive Maintenance Schedule” on page 6-6, and “Preventive Maintenance Schedule—ZoneAire Sleep Surface” on page 6-11.
2. Ensure all components are in place and secure.
3. Complete all required administrative tasks.

Test Equipment

2

WARNING:
Only qualified service personnel should use test equipment on the Advance Series Bed. Before using the test equipment on the Advance Series Bed, be sure that you have read and understand the information under “Test Equipment”.

To complete the electrical diagnostics testing described, you will need the following:

- Four Motor Bed Tester (see “Four Motor Bed Tester (Not Available)” on page 2-23)
- Volt-ohm meter (see “Volt-Ohm Meter (VOM)” on page 2-30)
- SideCom Communication System tester (see “SideCom Communication System Tester” on page 2-34)
- Jumper wire

NOTE:
For checking voltages, you will need a volt-ohm meter (VOM). Fine tip probes are recommended for checking voltages.

This test equipment will help service personnel pinpoint operational problems on the Advance Series Bed. This chapter includes a list of functions and the technical information required to inspect the bed and diagnose problems. Wiring diagrams for the boards in the Advance Series Bed are located in chapter 3.

Testing Requirements

Before you begin troubleshooting the Advance Series Bed, use either the Four Motor Bed Tester or a VOM to check the following voltages. Follow the instructions for either the Four Motor Bed Tester (see “Four Motor Bed Tester (Not Available)” on page 2-23), or your VOM (see “Volt-Ohm Meter (VOM)” on page 2-30) to perform the following tests:

- Check VCC (+4 to +5V DC)
- Check VDD (+9 to +12V DC)
- Check V+ (+9 to +12V DC)
- Check B+ (+9 to +12V DC)

If your measurements do not match the values listed, the problem may be in the high voltage power control board. Refer to the wiring diagram “Testport Cable” on page 3-11 for additional information.

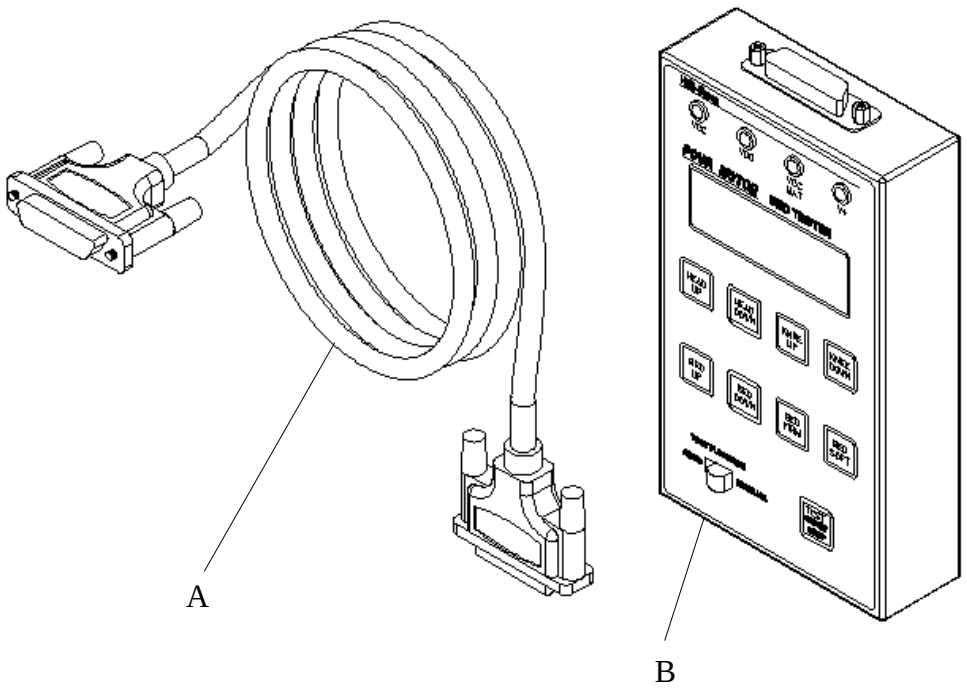
Four Motor Bed Tester (Not Available)

Description

The Four Motor Bed Tester is a tool that allows the user to verify proper operation of various four motor beds. The Four Motor Bed Tester consists of:

- Test unit (B)
- Test cable (A) (P/N SA5037)

Figure 2-7. Four Motor Bed Tester and Cable



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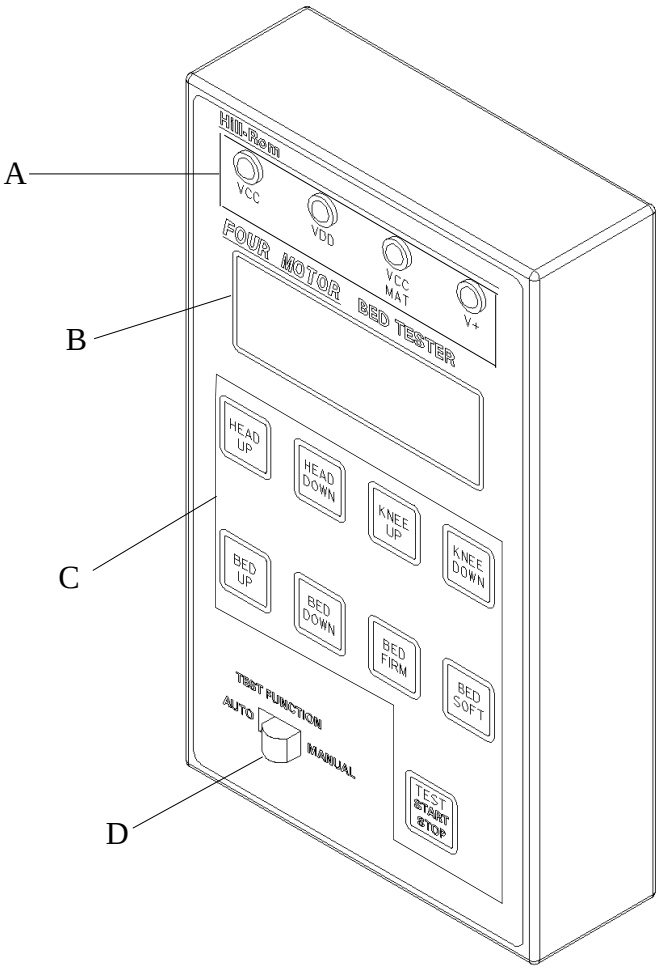
Test Unit (Not Available)

The test unit determines the operation of bed function circuits and indicates the status of various DC power supplies. The test unit consists of:

- Four indicator light emitting diodes (LEDs) (A)
- Display (B)
- Keypad (C)
- Selector switch (D)

Figure 2-8. Four Motor Test Unit (Not Available)



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LEDs

The four LEDs across the top of the test unit monitor the following four different bed voltages:

- VCC
- VDD
- VCC MAT (DynamicAire Sleep Surface models **only**)
- V+

The LEDs show green when the voltages are correct and red when the voltages are incorrect.

Display

The digital display indicates to the user the current test mode, failed messages, and passed messages.

Keypad

There are eight membrane type switch pads for performing the bed function tests.

- Head up
- Head down
- Knee up
- Knee down
- Bed up
- Bed down
- Bed firm
- Bed soft

An additional membrane switch pad, located at the lower right of the unit, starts and stops the automatic test mode.

Selector Switch

The selector switch, located at the lower left side of the test unit, places the test unit in the manual or automatic test mode.

Test Cable

The test cable is a 25 pin conductor cable with a 25 pin DSubminiature (DSub) connector at each end. The test cable connects the test unit to the testport on the bed.

Four Motor Bed Tester Operation

The following procedures describe the proper operation of the Four Motor Bed Tester. It demonstrates:

- Connections
- Voltage checks
- Test modes

Connections

Two connections are required in order to use the Four Motor Bed Tester. The two connections are:

- Attach the test cable to the test unit.
- Attach the test cable to J/P200 testport cable at the head end of the bed (see figure 2-9 on page 2-27).

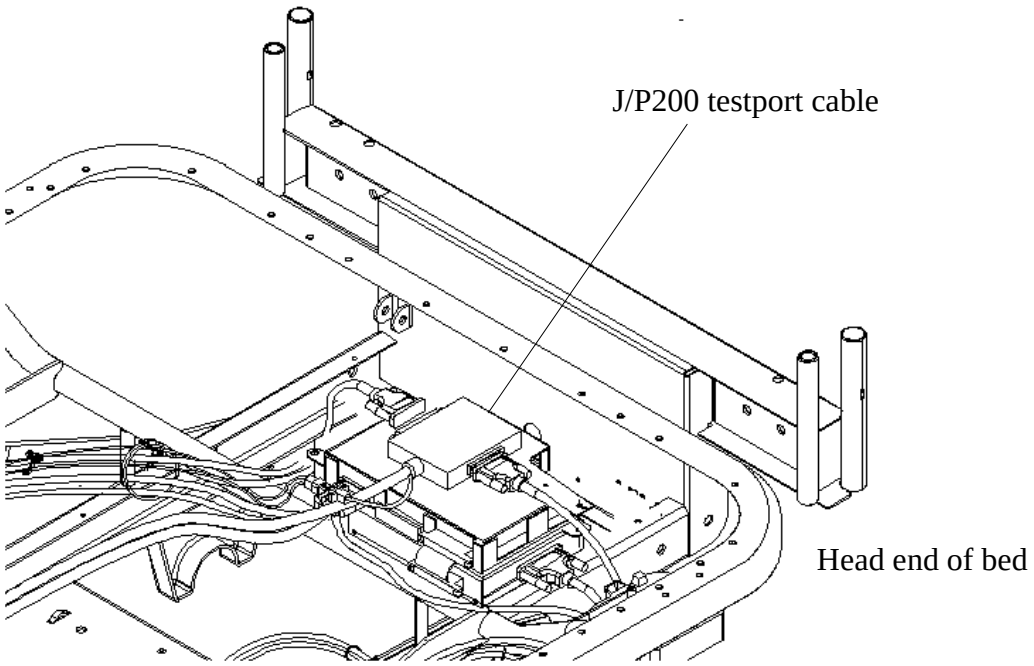
Test Cable to Test Unit

The test cable connects to the test unit through the DSub connector. Either end of the cable can connect to the test unit, since each end is identical. The polarized DSub connector prevents improper insertion. After insertion, tighten the thumbscrews to ensure good mechanical and electrical connection to the test unit.

Test Cable to Bed

The other end of the test cable connects to the DSub connector (J/P200) located at the head end of the bed. The polarized DSub connectors prevent improper insertion. After insertion, tighten the thumbscrews to ensure good mechanical and electrical connection to the bed under test.

Figure 2-9. Four Motor Test Unit Connection to JP200



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Voltage Checks

The four LEDs across the top of test unit provide continuous indication of proper bed operation voltages. The four LEDs correspond to:

- VCC 5V DC
- VDD 12V DC
- VCCMAT 5V DC (DynamicAire Sleep Surface models **only**)
- V+ 12V DC

The LED displays green if the corresponding voltage is within 10% of the correct value. The LED displays red if the corresponding voltage is not within 10% of the correct value. If any of the LEDs are red, there may be a problem with one of the bed's circuit boards.

NOTE:
The VCCMAT light **will** be red if the bed does **not** include the DynamicAire Sleep Surface.

2

Test Modes

The Four Motor Bed Tester has two test modes:

- Manual test mode
- Automatic test mode

NOTE:
Before beginning any test, ensure that the knee section of the bed is positioned at its automatic contour limit and that all other bed sections are positioned at, or near, any of their operating limits. Also, ensure that all bed functions are turned off.

Manual Test Mode

Setting the selector switch in the manual position places the test unit in the manual test mode. The display indicates *Select Test…*, prompting the user to select a test.

The user selects a test by pressing one of the function buttons on the keypad. When the user presses the button, the actual bed function operates and the display indicates *Testing…*, representing the function under test.

While the user is pressing the function button, the test unit is checking the logic circuitry on the bed. When the user releases the function button, the display indicates the results of the logic circuit test with a *FAILED* or *PASSED* message.

For each test that has a *FAILED* message, complete the appropriate test in the section “Volt-Ohm Meter (VOM)” on page 2-30 for continued isolation of the fault.

Automatic Test Mode

Setting the selector switch in the automatic position places the test unit in the automatic test mode. The display indicates *Press Start/Stop to begin test*, prompting the user to begin the automatic test.

When the user presses the start/stop key, the test unit begins the automatic test sequence. The test unit checks the following in the order listed:

- Inflate test
- Deflate test
- Bed up logic
- Bed down logic
- Head up logic
- Head down logic
- Knee up logic
- Knee down logic

The display indicates each test as it is running with a *Testing…* message.

The test unit runs each test for approximately 100 milliseconds. After completion of each test, the display indicates the results of the logic circuit test with a *FAILED* or *PASSED* message.

When the test unit completes the entire test sequence, the display lists each failed test. The user may end this display by pressing the start/stop key, or by placing the selector switch in the manual position.

For each test that has a *FAILED* message, complete the appropriate test in the section “Volt-Ohm Meter (VOM)” on page 30 for continued isolation of the fault.

Voltage Checks

The four LEDs across the top of test unit provide continuous indication of proper bed operation voltages. The four LEDs correspond to:

- VCC (+5V DC)
- VDD (+12V DC)
- VCCMAT (+5V DC)
- V+ (+12V DC)

The LED displays green if the corresponding voltage is within 10% of the correct value. The LED displays red if the corresponding voltage is not within 10% of the correct value. If any of the LEDs are red, there may be a problem with one of the bed’s circuit boards.

NOTE:
The VCCMAT light **will** be red if your bed does **not** include the DynamicAire Sleep Surface.

2

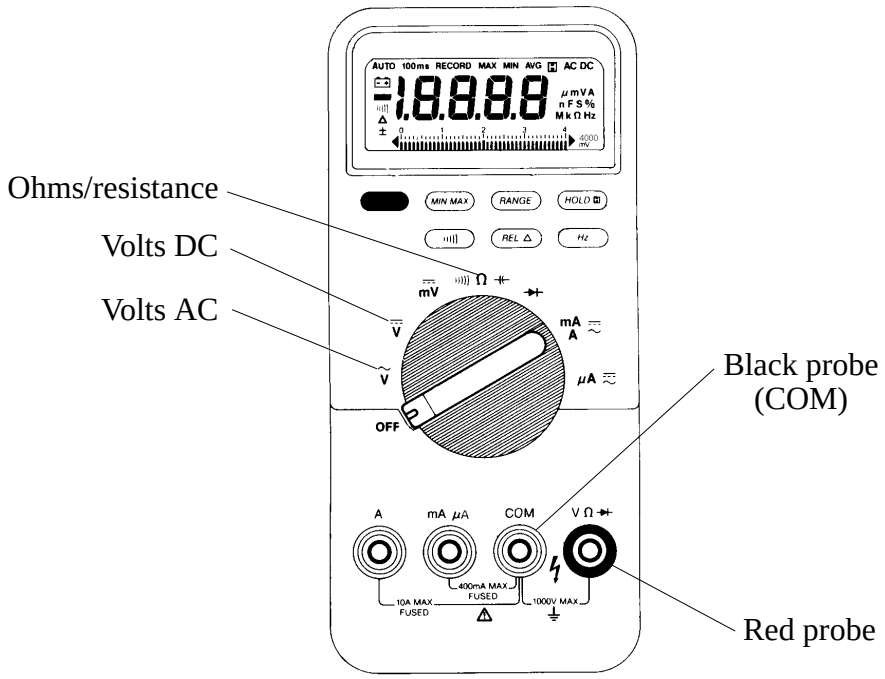
Volt-Ohm Meter (VOM)

WARNING:
Refer to your VOM owner's manual for complete and detailed information regarding the operation of your VOM. Personal injury can occur.

Electrical Functions

A common digital VOM is shown in figure 2-10 on page -30. The three basic electrical functions that require testing are alternating current (AC), direct current (DC), and ohms/resistance.

Figure 2-10. Volt-Ohm Meter (VOM)—Typical Test Instrument



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The probes plug into the VOM as shown in figure 2-10. The red probe plugs into the port marked V Ω. The black probe plugs into the port marked COM. The troubleshooting flow tables (table 2-4 on page 2-31, table 2-5 on page 2-32, and table 2-6 on page 2-33) indicate where to place the red and black probes during each test.

WARNING:
Unplug the bed from its power source before checking ohms/resistance measurements. Failure to disconnect line voltage to the bed can cause personal injury and damage the VOM.

When troubleshooting the Advance Series Bed, use the following as common ground connections:

- At J/P200 (testport cable), use pin 21 (VSS)
- At component Q1 (heat sink) at the high voltage control board
- At J/P39 (footboard connector), use pin 4 (VSS)

When troubleshooting on the Advance Series Bed, use a VOM to measure voltages. Perform all voltage measurements specified in table 2-4 on page 2-31 at J/P200 (testport cable), except the B+ measurement. Measure B+ at J/P9 (located on the high voltage control board).

Set your VOM to measure V DC. Complete all of the test functions listed in table 2-4 on page 2-31, table 2-5 on page 2-32, and table 2-6 on page 2-33. Refer to the wiring diagram for the "Testport Cable" on page 3-11 for additional information.

Table 2-4. Electrical Functions Test One

Function Test Location	Probe Location	Correct Voltage	Possible Fault
VCC Test at J/P200 testport cable.	Black—pin 21 red—pin 5	+4 to +5V DC	If the voltage is outside of the correct voltage range (but not zero), then the P.C. board is defective. If the voltage is zero volts, then either the wiring or the P.C. board is defective.
VDD Test at J/P200 testport cable.	Black—pin 21 red—pin 14	+9 to +12V DC	
V+ Test at J/P200 testport cable.	Black—pin 12 red—pin 13	+9 to +12V DC	
B+ Test at J/P9 high voltage control board.	Black—pin 4 red—pin 1	+9 to +12V DC	

2

NOTE:
The tests listed in table 2-5 on page 2-32 check the mattress function voltages. These apply to beds with the DynamicAire Sleep Surface **only**. Set your VOM to measure V DC. Complete all of the test functions listed. Take all measurements at the J/P200 testport cable.

Table 2-5. Electrical Functions Tests for Mattress

Function	Probe Location	Correct Voltage	Possible Fault
VCC MAT	Black—pin 12 red—pin 2	+4 to +5V DC	If the voltage is outside of the correct voltage range (but not zero), then the P.C. board is defective. If the voltage is zero volts, then either the wiring or the P.C. board is defective.
Siderail mattress deflate	Black—pin 3 red—pin 2	+4 to +5V DC	
Siderail mattress inflate	Black—pin 4 red—pin 2	+4 to +5V DC	

NOTE:
The tests listed in table 2-6 on page 2-33 check the bed function voltages. Set the VOM to measure V DC. Take all measurements at the J/P 200 testport cable.

Table 2-6. Electrical Functions Tests for Bed

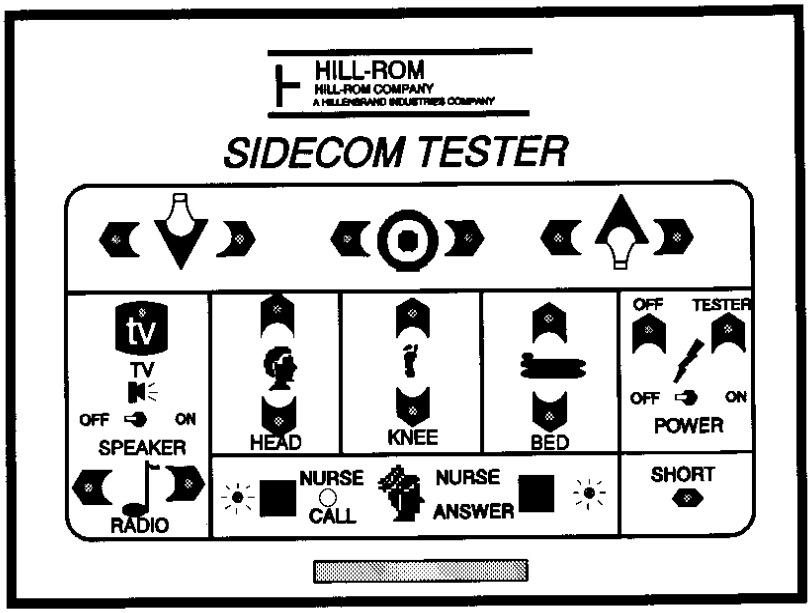
Function	Probe Location	Correct Voltage	Possible Fault
KD—knee down	Black—pin 12 red—pin 6	+3 to +6V DC when the knee down switch is activated	If the voltage is outside of the correct voltage range (but not zero) when the switch is activated, then the P.C. board is defective. If you have a voltage reading without activating the switch, the switch is defective. If the voltage is zero volts when the switch is activated, then the wiring, switch, or the P.C. board is defective.
KU—knee up	Black—pin 12 red—pin 7	+3 to +6V DC when the knee up switch is activated	
HD—head down	Black—pin 12 red—pin 8	+3 to +6V DC when the head down switch is activated	
HU—head up	Black—pin 12 red—pin 9	+3 to +6V DC when the head up switch is activated	
BD—hilow down	Black—pin 12 red—pin 10	+3 to +6V DC when the hilow down switch is activated	
BU—hilow up	Black—pin 12 red—pin 11	+3 to +6V DC when the hilow up switch is activated	
KUL—knee up logic	Black—pin 21 red—pin 15	+3 to +6V DC when the knee up switch is activated	
KDL—knee down logic	Black—pin 21 red—pin 16	+3 to +6V DC when the knee down switch is activated	
XUL—hilow up logic for the head hilow	Black—pin 21 red—pin 17	+3 to +6V DC when the hilow up switch is activated	
XDL—hilow down logic for the head hilow	Black—pin 21 red—pin 18	+3 to +6V DC when the hilow down switch is activated	
HUL—head up logic	Black—pin 21 red—pin 19	+3 to +6V DC when the head up switch is activated	
HDL—head down logic	Black—pin 21 red—pin 20	+3 to +6V DC when the head down switch is activated	
BUL—hilow up logic for the foot hilow	Black—pin 21 red—pin 23	+3 to +6V DC when the hilow up switch is activated	
BDL—hilow down logic for the foot hilow	Black—pin 21 red—pin 24	+3 to +6V DC when the hilow down switch is activated	
Bed power	Black—pin 21 red—pin 22	+3 to +6V DC	**Note:** You must place your black probe into pin 21 when checking bed power, or you will get a negative voltage reading.

2

SideCom Communication System Tester

The SideCom Communication System tester (P/N SA5002) checks the control functions of the siderail communication system on a SideCom Communication System equipped bed (see figure 2-11 on page 2-34). The tester connects to the bed's communication cable (P379) and siderail cable. Use the tester to determine if the siderail's SideCom Communication System and bed controls are operating properly.

Figure 2-11. SideCom Communication System Tester



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Connecting SideCom Communication System Tester For Operation

To operate the SideCom Communication System tester, perform the following steps:

1. Disconnect the P379 cable from the wall.
2. Connect the P379 cable to the SideCom Communication System tester.
3. Connect the tester to a standard 110V AC outlet.
4. Turn the tester power switch to the on position.

NOTE:
All of the lights on the tester should be off except for the tester power and auxiliary power lights.

Testing With SideCom Communication System Tester

NOTE:
Operating the HEAD—KNEE—HILOW switch from the siderail will **not** turn on the corresponding lamp on the tester. These three functions do not operate with the Advance Series Bed.

1. Operate the DIRECT—INDIRECT or RADIO switch from the left siderail. The corresponding light operates.

   Yes **No**
   ↓ → The fault is in the corresponding siderail or the cable to the siderail.

   Repeat this step for the right siderail.

2. Operate the TV switch from the left siderail. The TV light on the SideCom Communication System Tester comes on.

   Yes **No**
   ↓ → The fault is in the corresponding siderail or the cable to the siderail.

   Repeat this step for the right siderail.

3. Operate either the inside or outside NURSE CALL from the left siderail. The NURSE CALL light on the tester comes on when either switch is activated.

   Yes **No**
   ↓ → The fault is in the corresponding siderail or the cable to the siderail.

   Repeat this step for the right siderail.

4. Operate the NURSE ANSWER button on the tester. The red LED on the inside of both siderails is turned on.

   Yes **No**
   ↓ → The fault is in the corresponding siderail or the cable to the siderail.

5. Operate the NURSE CALL button on the tester. The amber LED on the inside of both siderails is turned on.

   Yes **No**
   ↓ → The fault is in the corresponding siderail or the cable to the siderail.

NOTE:
The amber LED on the siderail will be on at all times at half brightness. The tester will only make the LED brighter.

6. Operate the SPEAKER switch on the tester. There is a continuous tone that is adjusted by the volume controls on the siderail.

   Yes **No**
   ↓ → The fault is in the corresponding siderail or the cable to the siderail.

7. Go to “Final Actions” on page 2-21.

Jumper Wire Test

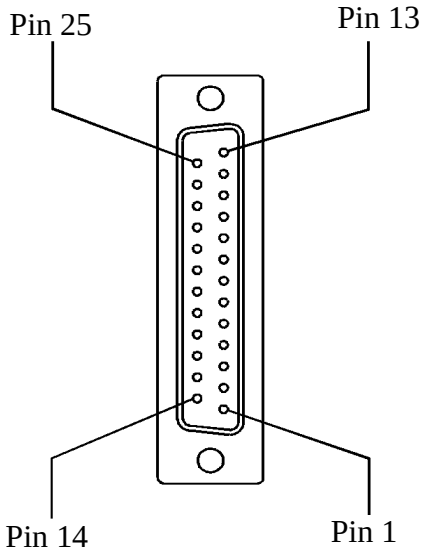
You can use a jumper wire to bypass the siderails and help isolate problems. This test is accomplished at the J/P200 testport cable connector number. See figure 2-12 on page 2-37 for pin locations at J/P200. Refer to table 2-7 on page 2-37 for jumper wire connections.

CAUTION:
Do not jump more than one function at the same time. Jumping more than one function at the same time can cause possible damage to the logic control P.C. board.

Table 2-7. Jumper Wire Test Connections

Function	Jump Pins
Siderail mattress inflate	Jump pins 2 and 3
Siderail mattress deflate	Jump pins 2 and 4
Knee down	Jump pins 5 and 6
Knee up	Jump pins 5 and 7
Head down	Jump pins 5 and 8
Head up	Jump pins 5 and 9
Hilow down	Jump pins 5 and 10
Hilow up	Jump pins 5 and 11

Figure 2-12. J/P200 Testport Cable Connector



2.1 Head Hilow Will Not Lower

The head section of the hilow will not lower when the bed down switch is activated.

1. Set your VOM to measure V DC. At J/P200, place the black probe into pin 12 and the red probe into pin 10. The voltage is between +3 and +6V DC when the switch is activated.

   Yes **No**
   ↓ → The switch or the wiring to the switch is defective.

2. Set your VOM to measure V DC. At J/P200, place the black probe into pin 21 and the red probe into pin 18. The voltage is between +3 and +6V DC when the switch is activated.

   Yes **No**
   ↓ → Set your VOM to measure V DC. At J/P70, place the black probe on the Q1 heat sink and the red probe into pin 2. If the voltage is between +3 and +6V DC when the switch is activated, the logic control board is defective. If no, the head hilow limit switch or the wiring to the limit switch is defective.

3. Set your VOM to measure V AC. At J/P2, place the black probe into pin 5 and the red probe into pin 6. The voltage is approximately 120V AC when the switch is activated.

   Yes **No**
   ↓ → If the AC voltage is more than 175V AC, the hilow head drive is defective. If the AC voltage is approximately 0V AC, then the high voltage control board or the hilow head motor is defective. If the voltage is approximately 120V AC, the hilow head capacitor is defective.

8. Go to “Final Actions” on page 2-21.

2.2 Foot Hilow Will Not Lower

The foot section of the hilow will not lower when the bed down switch is activated.

1. Set your VOM to measure V DC. At J/P200, place the black probe into pin 12 and the red probe into pin 10. The voltage is between +3 and +6V DC when the switch is activated.

   Yes **No**
   ↓ → The switch or the wiring to the switch is defective.

2. Set your VOM to measure V DC. At J/P200, place the black probe into pin 21 and the red probe into pin 24. The voltage between +3 and +6V DC when the switch is activated.

   Yes **No**
   ↓ → Set your VOM to measure V DC. At J/P72, place the black probe onto a ground screw and the red probe into pin 2. Activate the switch. If the voltage is between +3 and +6V DC when the switch is activated, the logic control board is defective. If the voltage is **not** between +3 and +6V DC when the switch is activated, the foot hilow limit switch or the wiring to the limit switch is defective.

3. Set your VOM to measure V AC. At J/P2, place the black probe into pin 1 and the red probe into pin 4. The voltage is approximately 120V AC when the switch is activated.

   Yes **No**
   ↓ → If the AC voltage is more than 175V AC, the hilow foot drive is defective. If the AC voltage is approximately 0V AC, the high voltage control board or the hilow foot motor is defective. If the voltage is approximately 120V AC, the hilow foot capacitor is defective.

4. Go to “Final Actions” on page 2-21.

2.3 Head Hilow Will Not Raise

The head section of the hilow will not raise when the bed up switch is activated.

1. Set your VOM to measure V DC. At J/P200, place the black probe into pin 12 and the red probe into pin 11. The voltage is between +3 and +6V DC when the switch is activated.

   Yes **No**
   ↓ → The switch or the wiring to the switch is defective.

2. Set your VOM to measure V DC. At J/P200, place the black probe into pin 21 and the red probe into pin 17. The voltage is between +3 and +6V DC when the switch is activated.

   Yes **No**
   ↓ → Set your VOM to measure V DC. At J/P70, place the black probe on the Q1 heat sink and the red probe into pin 1. If the voltage is between +3 and +6 V DC when the switch is activated, the logic control board is defective. If no, the head hilow switch or the wiring to the head hilow switch is defective.

3. Set your VOM to measure V AC. At J/P2, place the black probe into pin 5 and the red probe into pin 6. The voltage is approximately 120V AC when the switch is activated.

   Yes **No**
   ↓ → If the AC voltage is more than 175V AC, the hilow head drive is defective. If the AC voltage is approximately 0V AC, the high voltage control board or the hilow head motor is defective. If the voltage is approximately 120V AC, the hilow head capacitor is defective.

4. Go to “Final Actions” on page 2-21.

2.4 Foot Hilow Will Not Raise

The foot section of the hilow will not raise when the bed up switch is activated.

1. Set your VOM to measure V DC. At J/P200, place the black probe into pin 12 and the red probe into pin 11. The voltage is between +3 and +6V DC when the switch is activated.

   Yes **No**
   ↓ → The switch or the wiring to the switch is defective.

2. Set your VOM to measure V DC. At J/P200, place the black probe into pin 21and the red probe into pin 23. The voltage is between +3 and +6V DC when the switch is activated.

   Yes **No**
   ↓ → Set your VOM to measure V DC. At J/P72, place the black probe onto a ground screw and the red probe into pin 1. If the voltage is between +3 and +6V DC when the switch is activated, the logic control board is defective. If no, the foot hilow limit switch or the wiring to the limit switch is defective.

3. Set your VOM to measure V AC. At J/P2, place the black probe into pin 1 and the red probe into pin 4. The voltage is approximately 120V AC when the switch is activated.

   Yes **No**
   ↓ → If the AC voltage is more than 175V AC, the hilow foot drive is defective. If the AC voltage is approximately 0V AC, the high voltage control board or the hilow foot motor is defective. If the voltage is approximately 120V AC, the hilow foot capacitor is defective.

4. Go to “Final Actions” on page 2-21.

2.5 Knee Section Will Not Lower

The knee section will not lower when the foot down switch is activated.

1. Set your VOM to measure V DC. At J/P200, place the black probe into pin 12 and the red probe into pin 6. The voltage is between +3 and +6V DC when the switch is activated.

   Yes **No**
   ↓ → The switch or the wiring to the switch is defective.

2. Set your VOM to measure V DC. At J/P200, place the black probe into pin 21 and the red probe into pin 16. The voltage is between +3 and +6V DC when the switch is activated.

   Yes **No**
   ↓ → Set your VOM to measure V DC. At J/P73, place the black probe onto a ground screw and the red probe into pin 2. If the voltage is between +3 and +6V DC when the switch is activated, the logic control board is defective. If no, the knee limit switch or the wiring to the limit switch is defective.

3. Set your VOM to measure V AC. At J/P3, place the black probe into pin 4 and the red probe into pin 7. The voltage is approximately 120V AC when the switch is activated.

   Yes **No**
   ↓ → If the AC voltage is more than 175V AC, the knee drive is defective. If the AC voltage is approximately 0V AC, the high voltage control board or the knee motor is defective. If the voltage is approximately 120V AC, the knee capacitor is defective.

4. Go to “Final Actions” on page 2-21.

2.6 Knee Section Will Not Raise

The knee section will not raise when the foot up switch is activated.

1. Set your VOM to measure V DC. At J/P200, place the black probe into pin 12 and the red probe into pin 7. The voltage is between +3 and +6V DC when the switch is activated.

   Yes **No**
   ↓ → The switch or the wiring to the switch is defective.

2. Set your VOM to measure V DC. At J/P200, place the black probe into pin 21 and the red probe into pin 15. The voltage is between +3 and +6V DC when the switch is activated.

   Yes **No**
   ↓ → Set your VOM to measure V DC. At J/P73, place the black probe onto a ground screw and the red probe into pin 1. If the voltage is between +3 and +6 V DC when the switch is activated, the logic control board is defective. If no, the knee limit switch or the wiring to the limit switch is defective.

3. Set your VOM to measure V AC. At J/P3, place the black probe into pin 4 and the red probe into pin 7. The voltage is approximately 120V AC when the switch is activated.

   Yes **No**
   ↓ → If the AC voltage is more than 175V AC, the knee drive is defective. If the AC voltage is approximately 0V AC, the high voltage control board or the knee motor is defective. If the voltage is approximately 120V AC, the knee capacitor is defective.

4. Go to “Final Actions” on page 2-21.

2.7 Head Section Will Not Lower

The head section will not lower when the head down switch is activated.

1. Set your VOM to measure V DC. At J/P200, place the black probe into pin 12 and the red probe into pin 8. The voltage is between +3 and +6V DC when the switch is activated.

   Yes **No**
   ↓ → The switch or the wiring to the switch is defective.

2. Set your VOM to measure V DC. At J/P200, place the black probe into pin 21 and the red probe into pin 20. The voltage is between +3 and +6V DC when the switch is activated.

   Yes **No**
   ↓ → Set your VOM to measure V DC. At J/P71, place the black probe onto a ground screw and the red probe into pin 2. If the voltage is between +3 and +6V DC when the switch is activated, the logic control board is defective. If no, the head down limit switch or the wiring to the limit switch is defective.

3. Set your VOM to measure V AC. At J/P2, place the black probe into pin 2 and the red probe into pin 3. The voltage is approximately 120V AC when the switch is activated.

   Yes **No**
   ↓ → If the AC voltage is more than 175V AC, the head drive is defective. If the AC voltage is approximately 0V AC, the high voltage control board or the head motor is defective. If the voltage is approximately 120V AC, the head capacitor is defective.

4. Go to “Final Actions” on page 2-21.

2.8 Head Section Will Not Raise

The head section will not raise when the head up switch is activated.

SHOCK HAZARD:

Unplug the bed from its power source. Failure to do so could result in personal injury or equipment damage.

1. Unplug the bed from its power source and manually crank the head section until it starts to raise from the main frame (see "Manual Operation of Bed (When Electric Power is Not Available)" on page 1-31). Remove IV rod, plug the bed into its power source, and activate head up switch. Head section raises.

   Yes **No**
   ↓ → Go to step 2.

   Check head up limit switch adjustment.

2. Set your VOM to measure V DC. At J/P200, place the black probe into pin 12 and the red probe into pin 9. The voltage is between +3 and +6V DC when the switch is activated.

   Yes **No**
   ↓ → The switch or the wiring to the switch is defective.

3. Set your VOM to measure V DC. At J/P200, place the black probe into pin 21 and the red probe into pin 19. The voltage is between +3 and +6V DC when the switch is activated.

   Yes **No**
   ↓ → Set your VOM to measure V DC. At J/P71, place the black probe onto a ground screw and the red probe into pin 1. If the voltage is between +3 and +6V DC when the switch is activated, the logic control board is defective. If no, the head up limit switch or the wiring to the limit switch is defective.

2

4. Set your VOM to measure V AC. At J/P2, place the black probe into pin 2 and the red probe into pin 3. The voltage is approximately 120V AC when the switch is activated.

   Yes **No**

   ↓ → If the AC voltage is more than 175V AC, the head drive is defective. If the AC voltage is approximately 0V AC, the high voltage control board or the head motor is defective.If the voltage is approximately 120V AC, the head capacitor is defective.

5. Go to “Final Actions” on page 2-21.

2.9 Head (Hilow) Section Will Not Lower With the Trendelenburg Switch Activated

The head section will not lower (head hilow motor does not operate) when the Trendelenburg switch is activated.

1. The head and knee sleep surfaces are completely flat.

   Yes **No**
   ↓ → If the head or knee run from the siderail, go to step 3. If they do not, see “Head Section Will Not Lower” on page 2-44 or “Knee Section Will Not Lower” on page 2-42.

2. Press the bed down switch on the siderail. The head section of the hilow goes down.

   Yes **No**
   ↓ → See “Head Hilow Will Not Lower” on page 2-38.

3. Set your VOM to check V DC. At J/P39, place the black probe into pin 4 and the red probe into pin 14. The voltage is between +3 and +6V DC when the switch is activated.

   Yes **No**
   ↓ → The nurse control wiring or the connector wiring is defective or the logic control board is defective.

4. Go to “Final Actions” on page 2-21.

2.10 Head (Hilow) Section Will Not Raise With Reverse Trendelenburg Switch Activated

The head section will not raise (head hilow motor does not operate) when the Reverse Trendelenburg switch is activated.

1. The head and knee sleep surfaces are completely flat.

   Yes **No**
   ↓ → If the head or knee run from the siderail, go to step 3. If they do not, see “Head Section Will Not Raise” on page 2-45 or “Knee Section Will Not Raise” on page 2-43.

2. Press the head up switch on the siderail. The head section of the hilow goes up.

   Yes **No**
   ↓ → See “Head Hilow Will Not Raise” on page 2-40.

3. Set your VOM to check V DC. At J/P39, place the black probe into pin 4 and the red probe into pin 9. The voltage is between +3 and +6V DC when the switch is activated.

   Yes **No**
   ↓ → The nurse control wiring or the connector wiring is defective or the logic control board is defective.

4. Go to “Final Actions” on page 2-21.

2.11 Foot (Hilow) Section Will Not Lower With the Reverse Trendelenburg Switch Activated

The foot section will not lower (foot hilow motor does not operate) when the Reverse Trendelenburg switch is activated.

1. The head and knee sleep surfaces are completely flat.

   Yes **No**
   ↓ → If the head or knee run from the siderail, go to step 3. If they do not, see “Head Section Will Not Lower” on page 2-44 or “Knee Section Will Not Lower” on page 2-42.

2. Press the bed down switch on the siderail. The foot section of the hilow goes down.

   Yes **No**
   ↓ → See “Foot Hilow Will Not Lower” on page 2-39.

3. Set your VOM to check V DC. At J/P39, place the black probe into pin 4 and the red probe into pin 9. The voltage is between +3 and +6V DC when the switch is activated.

   Yes **No**
   ↓ → The nurse control wiring or the connector wiring is defective or the logic control board is defective.

4. Go to “Final Actions” on page 2-21.

2.12 Foot (Hilow) Section Will Not Raise With the Trendelenburg Switch Activated

The foot section will not raise (foot hilow motor does not operate) when the Trendelenburg switch is activated.

1. Press the bed up switch on the siderail. The foot section of the hilow goes up.

   Yes ↓ **No** → See “Foot Hilow Will Not Raise” on page 2-41.

2. Set your VOM to check V DC. At J/P39, place the black probe into pin 4 and the red probe into pin 9. The voltage is between +3 and +6V DC when the switch is activated.

   Yes ↓ **No** → The nurse control wiring or the connector wiring is defective, or the logic control board is defective.

3. Go to “Final Actions” on page 2-21.

2.13 Night Light Will Not Operate

The night light will not work.

NOTE:
You must cover the night light sensor to activate the night light.

1. The night light switch, located on the electronics pan assembly, is in the ON position.

   Yes **No**
   ↓ → Turn the switch on and retest.

2. Check the sensor control adjustment. Adjust the sensor control to the desired setting. The night light comes on.

   Yes **No**
   ↓ → Go to step 5.

3. Go to "Final Actions" on page 2-21.

4. Check that the night light bulb is not burned out. Bulb checks okay.

   Yes **No**
   ↓ → Replace the night light bulb and retest.

5. Set your VOM to measure V DC. At J/P39, place the black probe into pin 4 and the red pin into probe 13. The voltage is approximately 12V DC.

   Yes **No**
   ↓ → The high voltage control board is defective.

6. Unplug the J/P14 connector on the night light board. The night light comes on.

   Yes **No**
   ↓ → Change the night light bulb. If the night light does not come on after the bulb is changed, then the night light board is defective or the night light sensor wiring is defective.

7. Go to "Final Actions" on page 2-21.

2.14 DynamicAire Sleep Surface Will Not Operate

The DynamicAire Sleep Surface will not operate.

1. The excessive airloss LED at the nurse control console comes ON.

   Yes **No**
   ↓ → Go to step 3.

2. Turn the air system power off and back on again. Retest the air system.

3. The air power switch, located in the nurse control panel at the foot end of the bed, is in the ON position.

   Yes **No**
   ↓ → Turn the switch ON and retest.

4. Press the firm switch to inflate the mattress. The mattress inflates.

   Yes **No**
   ↓ → Go to step 5.

   Go to step 14.

5. Press the soft switch to deflate the mattress. The mattress deflates.

   Yes **No**
   ↓ → Go to step 6.

   Go to step 7.

6. Check the air system P.C. board connectors and retest. The mattress deflates.

   Yes **No**
   ↓ → The air system P.C. board is defective.

   The air system is OK go to “Final Actions” on page 2-21.

7. Retest the inflate switch. The mattress inflates.

   Yes **No**
   ↓ → Go to step 8.

   Go to step 15.

8. The air compressor runs.

   Yes **No**
   ↓ → Go to step 9.

   Go to step 10.

9. Set your VOM to measure V AC. At J/P29, place the black probe into pin 1 and the red probe into pin 4. The voltage is approximately 110V AC.

   Yes **No**
   ↓ → The air system P.C. board is defective.

   The air compressor is defective.

10. The solenoid clicks.

    Yes **No**
    ↓ → Go to step 12.

11. Check the pop-off valve on the manifold. Check for proper hose connections, pinched air hoses, or air leaks. Pop-off valve, hoses, and connections are okay.

    Yes **No**
    ↓ → Make the necessary repairs and retest.

    Replace the air intake manifold.

12. Set your VOM to measure V AC. At J/P29, place the black probe into pin 1 and the red probe into pin 5. The voltage is approximately 110V AC.

    Yes **No**
    ↓ → Go to step 13.

    Replace the solenoid.

13. Check the continuity of the solenoid. The solenoid is shorted.

    Yes **No**
    ↓ → Replace both the solenoid and the air system P.C. board.

    Replace the air system P.C. board.

14. Press the comfort switch to soften the mattress. The mattress deflates.

    Yes **No**
    ↓ → Go to step 18.

2

15. Change the mode of the mattress to prevention. The mattress inflates.

Yes **No**
↓ → Go to step 16.

Go to step 17.

16. The automatic LED lights.

Yes **No**
↓ → Check the automatic switch or the wiring harness.

The sleep surface control board is defective.

17. Press firmly on the mattress and release. The mattress inflates.

Yes **No**
↓ → The sleep surface control board is defective.

The top bladder system is OK.

18. Press a different switch to soften the mattress. The mattress deflates.

Yes **No**
↓ → Go to step 19.

The firm or soft switch is defective.

19. Check for continuity of the solenoids. The solenoids are shorted.

Yes **No**
↓ → Go to step 20.

Replace the shorted solenoids.

20. Set your VOM to measure V AC. At J/P29, place the black probe into pin 1 and the red probe into pin 6. AC voltage is present.

Yes **No**
↓ → The sleep surface control board is defective.

Replace the solenoid.

21. Go to “Final Actions” on page 2-21.

2.15 ZoneAire Sleep Surface Slow Leak—Error Code 2-1

When isolating the fault to one component in the pneumatic subsystem, ensure that all cables and air hoses are connected properly. Check the coupling and all tubing for signs of damage.

CAUTION:
Ensure that your hands are clean, and handle the P.C. boards by their edges **only** to prevent component damage. Wear an appropriate static strap when working with electronics. Equipment damage can occur. See “P.C. Boards” on page 6-4 for additional information.

NOTE:
Leaks are more obvious in the auto firm mode. Hose connections are the most common source of leaks.

1. Press the SLEEP SURFACE power switch and the AUTO FIRM switch to place the Advance Series Bed ZoneAire Sleep Surface in the auto firm mode. Feel around the mattress air hose connections and down the length of the air hose for obvious leaks. Leaks are detected.

   Yes **No**
   ↓ → Spray soapy water around the air hoses and connections to detect leaks. Go to step 4.

2. Replace the leaking air hoses. Leaks are stopped.

   Yes **No**
   ↓ → Spray soapy water around the air hoses and connections to detect leaks. Go to step 4.

3. Go to “Final Actions” on page 2-21.

4. Open the mattress, and feel for holes in the bladders and seams. In the case of a slow leak, remove the suspected air bladder from the mattress, and spray soapy water on the inflated bladder.

5. If leaks are detected, replace the leaking bladder. Leaks are stopped.

   Yes **No**
   ↓ → Replace the air control board.

6. Go to “Final Actions” on page 2-21.

2.16 ZoneAire Sleep Surface Continuous Run—Error Code 2-2

SHOCK HAZARD:

Unplug the bed from its power source. Failure to do so could result in personal injury or equipment damage.

CAUTION:
Ensure that your hands are clean, and handle the P.C. boards by their edges **only** to prevent component damage. Wear an appropriate static strap when working with electronics. Equipment damage can occur. See “P.C. Boards” on page 6-4 for additional information.

1. Check the mattress for pinched or disconnected air hoses. Pinched or disconnected air hoses are found.

   Yes **No**
   ↓ → Go to step 4.

2. Replace the pinched hoses, or connect the disconnected hoses.

   This solves the problem.

   Yes **No**
   ↓ → Go to step 4.

3. Go to “Final Actions” on page 2-21.

4. Check for large holes in the mattress upper main bladder, lower main bladder, and in the heel bladder. Also check that hoses are connected to the correct components. Holes are found.

   Yes **No**
   ↓ → Go to step 10.

5. Replace the defective bladder, and/or connect the air hoses to the correct components.

   This solves the problem.

   Yes **No**
   ↓ → Go to step 10.

6. Go to “Final Actions” on page 2-21.

7. Reset the system and cause a deflate to occur.

8. Use a VOM to check for 108-130 VAC at P117-1 and P117-2 on the direction control board. Voltage is okay.

   Yes **No**
   ↓ → Go to step 14.

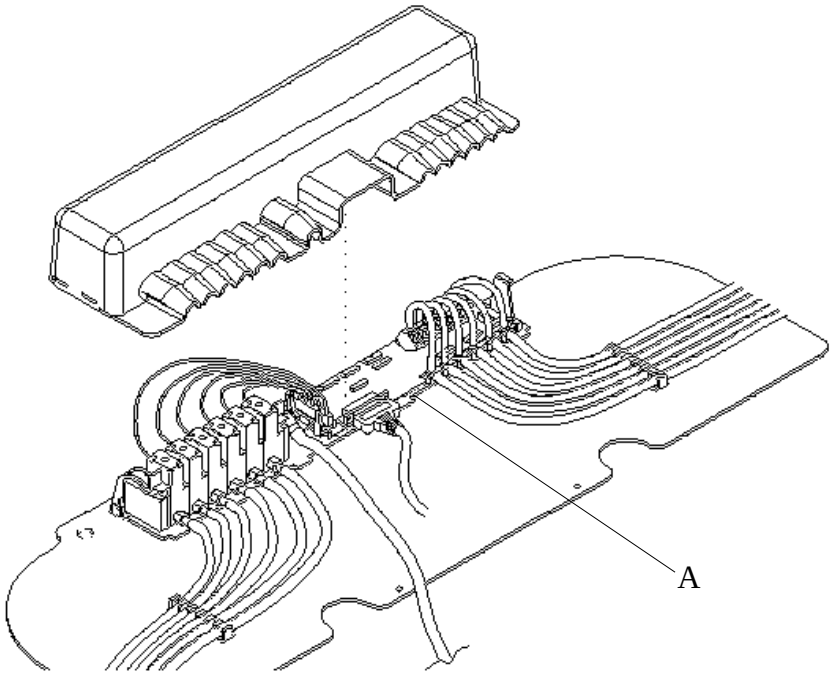
9. Check functionality of the flow direction valve. The white dot on top of the valve should click into place during a deflate condition; also, the valve's resistance reading should be 700 Ohms maximum. The flow direction valve functions okay.

   Yes **No**
   ↓ → Replace the flow direction valve.

10. Check the connector on the sensor control board (A) for bent or missing pins and ensure connector is properly seated (see figure 2-13 on page 2-57). Bent or missing pins are found.

    Yes **No**
    ↓ → Go to step 14.

Figure 2-13. Sensor Control Board



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11. Replace the sensor surface cable.

    This solves the problem.

    Yes **No**
    ↓ → Go to step 13.

12. Go to “Final Actions” on page 2-21.

13. Replace the bed sensor cable.

    This solves the problem.

    Yes **No**
    ↓ → Go to step 14.

14. Replace the air control board.

    This solves the problem.

    Yes **No**
    ↓ → Replace the sensor control board.

15. Go to “Final Actions” on page 2-21.

2.17 ZoneAire Sleep Surface Triac Short—Error Code 2-3

A triac short is the most common reason for the valve being energized all of the time.

SHOCK HAZARD:

Unplug the bed from its power source. Failure to do so could result in personal injury or equipment damage.

CAUTION:
Ensure that your hands are clean, and handle the P.C. boards by their edges **only** to prevent component damage. Wear an appropriate static strap when working with electronics. Equipment damage can occur. See “P.C. Boards” on page 6-4 for additional information.

1. Unplug the bed from its power source.
2. Replace the air control board.
3. Go to “Final Actions” on page 2-21.

2.18 ZoneAire Sleep Surface Sensor EEPROM—Error Code 2-4

This error occurs when the circuit detects a faulty reading due to shorted or open communication lines between the control circuit and the pressure sensing circuit. The most common cause for this error is a faulty P.C. board or cable. Troubleshooting this error in the field would take much time and an oscilloscope. Therefore, this method requires inspecting and replacing parts. After inspecting or replacing such parts in the sequence listed, press the SLEEP SURFACE power switch to determine if the problems have been corrected.

SHOCK HAZARD:

Unplug the bed from its power source. Failure to do so could result in personal injury or equipment damage.

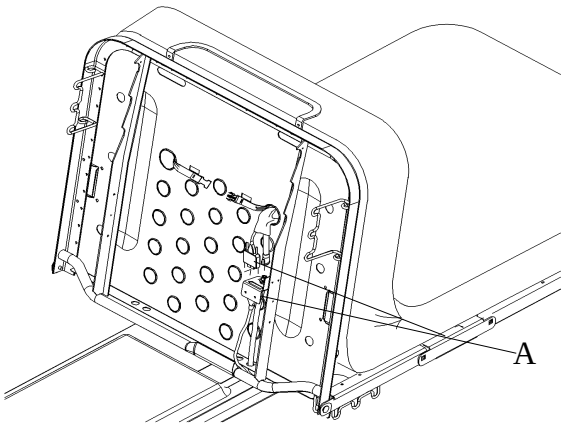
CAUTION:
Ensure that your hands are clean, and handle the P.C. boards by their edges **only** to prevent component damage. Wear an appropriate static strap when working with electronics. Equipment damage can occur. See “P.C. Boards” on page 6-4 for additional information.

1. Unplug the bed from its power source.

2. Inspect the main cable connector (A) and pins under the foot section for bent, recessed, or missing pins (see figure 2-14 on page 2-60). Replace or repair damaged pins. Connect the cable. This solves the problem.

   Yes **No**
   ↓ → Go to step 4.

Figure 2-14. Advance Series Bed With the Foot Section Raised



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3. Go to “Final Actions” on page 2-21.

4. Replace the main cable. This solves the problem.

   Yes **No**
   ↓ → Go to step 6.

5. Go to “Final Actions” on page 2-21.

6. Inspect the connector and pins of P131 on the sensor board for bent, recessed, or missing pins. Replace or repair the damaged pins. Connect the connector. This solves the problem.

   Yes **No**
   ↓ → Go to step 8.

7. Go to “Final Actions” on page 2-21.

8. Inspect the connector and pins of P114 on the air control board. Replace or repair the damaged pins. Connect the connector. This solves the problem.

   Yes **No**
   ↓ → Go to step 10.

9. Go to “Final Actions” on page 2-21.

10. Replace the air control board. This solves the problem.

    Yes **No**
    ↓ → Replace the sensor board.

11. Go to “Final Actions” on page 2-21.

2.19 ZoneAire Sleep Surface Mattress Disconnected— Error Code 2-5

The possible cause of this error is that the electrical connection between the control circuit and the pressure sensing circuit is disconnected.

SHOCK HAZARD:

Unplug the bed from its power source. Failure to do so could result in personal injury or equipment damage.

CAUTION:
Ensure that your hands are clean, and handle the P.C. boards by their edges **only** to prevent component damage. Wear an appropriate static strap when working with electronics. Equipment damage can occur. See “P.C. Boards” on page 6-4 for additional information.

NOTE:
When connecting a voltmeter to the component(s), make sure the leads are free of conformal coating for good connection(s).

1. Unplug the bed from its power source.

2. Check the main connector (A) under the foot section of the bed for bent or recessed pins (see figure 2-14 on page 2-60). Also check P131 and P114 for bent or recessed pins. Replace or repair the damaged pins. Connect the connector, and connect the bed to its power source. Press the SLEEP SURFACE power switch and wait about 6 seconds. Error code 2-5 appears.

   This solves the problem.

   Yes **No**
   ↓ → Go to step 4.

3. Go to “Final Actions” on page 2-21.

SHOCK HAZARD:

High voltage is present. Use extreme care, or personal injury could occur.

WARNING:
Secure the mattress and frame while removing the dust cover. Failure to do so could result in personal injury.

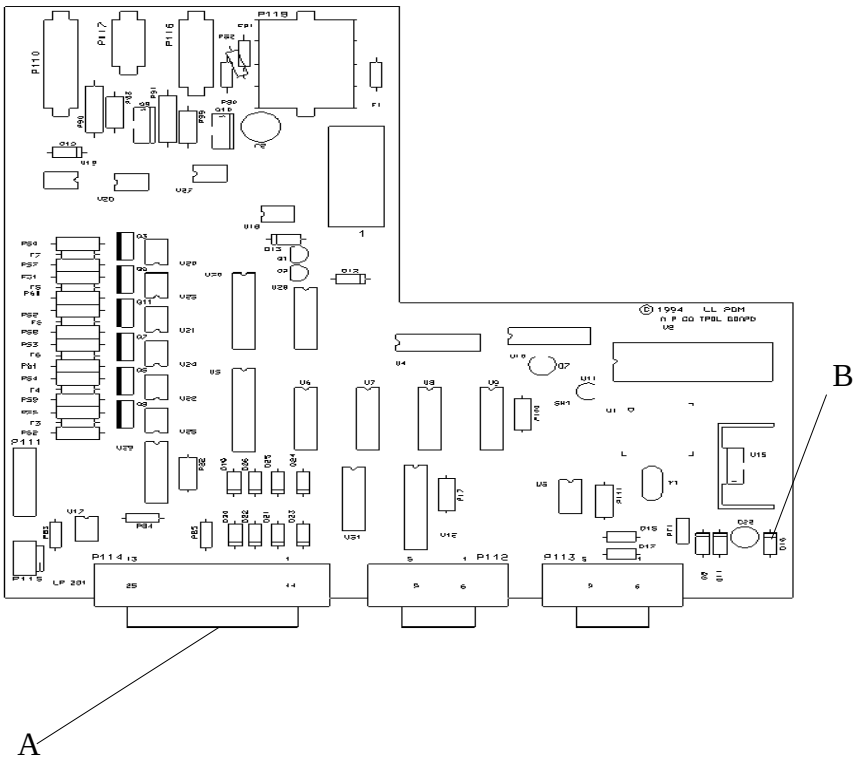
4. Remove two torx head screws and loosen the two remaining torx head screws on top of the seat section portion of the sleep surface. (On A, B, C, and E version beds, loosen the screws on top of the seat section portion of the sleep surface; then reach under the seat section, and rotate the two locks securing the seat section to the sleep surface.)

5. Place the seat section on either the head or foot sleep surface.

6. Connect the negative lead of the voltmeter to the anode end of D16 (B) located on the air control board (see figure 2-15 on page 2-63). Initiate the self diagnostics test. Connect the positive lead of voltmeter to pin 1 on P114 (A). The DC voltage is greater than 8V DC.

   Yes ↓ **No** → Replace the air control board.

Figure 2-15. Air Control Board



2

7. With the negative lead of the voltmeter still connected to the anode end of D16 (B), initiate the self diagnostics test. Put the positive lead of voltmeter on pin 13 of P114 (A). The voltage is greater than 4V DC.

   Yes **No**
   ↓ → Go to step 10.

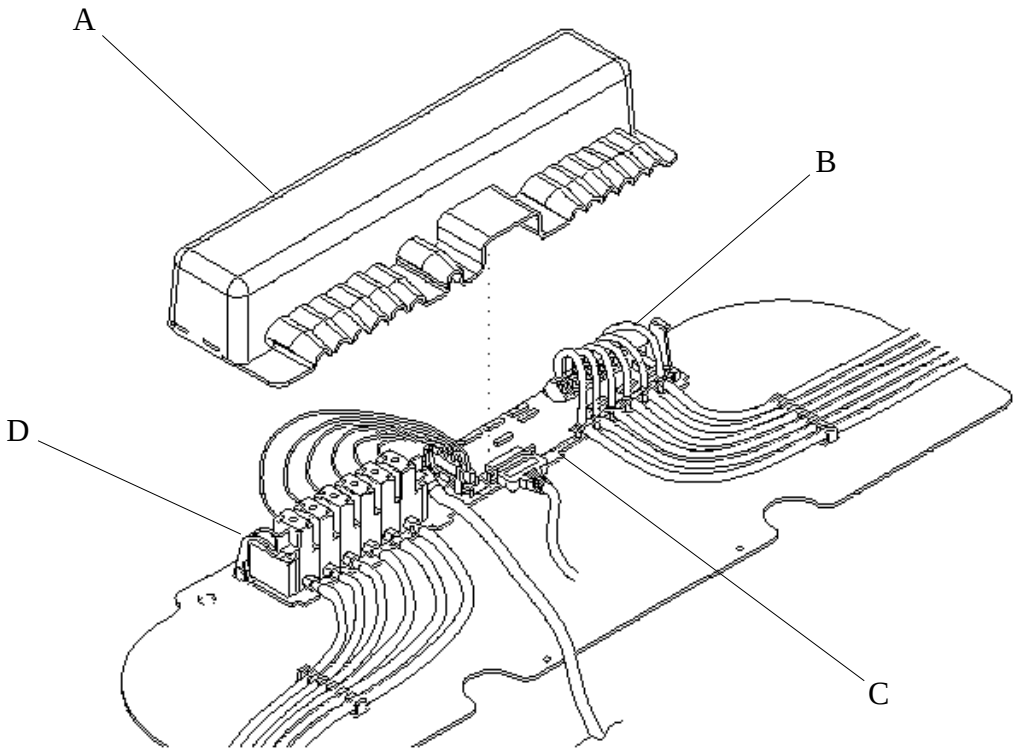
8. Replace the air control board. This solves the problem.

   Yes **No**
   ↓ → Go to step 10.

9. Install all covers and return the bed to operating condition. Go to "Final Actions" on page 2-21.

10. Unzip the mattress to gain access to the components in the foot end of the mattress (see figure 2-16 on page 2-64).

Figure 2-16. Surface Control Components



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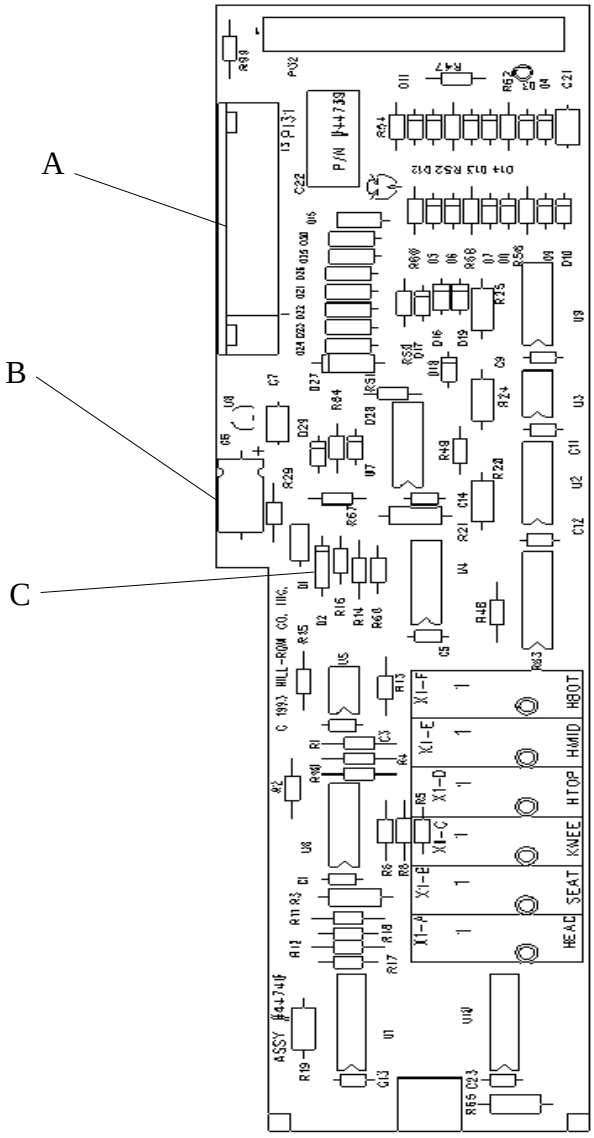
11. Remove the surface control cover (A) from the surface control frame (B).

12. Connect the negative lead of the voltmeter to the negative lead of C6 (B) on the sensor board (see figure 2-17 on page 2-65). Initiate the self diagnostics test. Connect the positive lead of the voltmeter to the cathode end of D2 (C). The DC voltage is greater than 8V DC.

Yes **No**

↓ → Check the mattress cable for continuity. Replace the cable if required.

Figure 2-17. Sensor Control Board



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13. With the negative lead of the voltmeter still connected to the negative lead of C6 (B), initiate the self diagnostics test. Put the positive lead of the voltmeter on pin 13 of P131 (A). The voltage is greater than 4V DC.

    Yes **No**
    ↓ → Replace the mattress sensor control board.

14. Go to “Final Actions” on page 2-21.

2.20 ZoneAire Sleep Surface Triac Open—Error Code 2-6

SHOCK HAZARD:

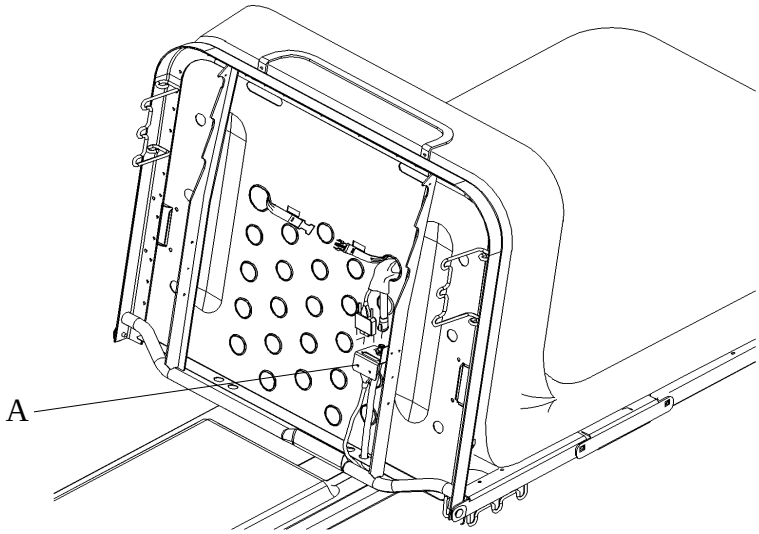
Unplug the bed from its power source. Failure to do so could result in personal injury or equipment damage.

CAUTION:

Ensure that your hands are clean, and handle the P.C. boards by their edges **only** to prevent component damage. Wear an appropriate static strap when working with electronics. Equipment damage can occur. See “P.C. Boards” on page 6-4 for additional information.

1. Unplug the bed from its power source
2. Raise the sleep surface (see figure 2-18 on page 2-67).
3. Disconnect the mattress cable (A).

Figure 2-18. Advance Series Bed With the Foot Section Raised



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4. Plug the bed into its power source, and perform the "Air System Self Diagnostic Test" on page 2-17. Only the first six sleep surface LEDs (PRESSURE RELIEF, HEEL RELIEF 1, HEEL RELIEF 2, HEEL RELIEF 3, COMFORT, and FIRMER) are flashing.

   Yes **No**
   ↓ → Go to step 16.

SHOCK HAZARD:

Unplug the bed from its power source. Failure to do so could result in personal injury or equipment damage.

5. Unplug the bed from its power source.

WARNING:
Secure the mattress and frame while removing the dust cover. Failure to do so could result in personal injury.

6. Remove two torx head screws and loosen the two remaining torx head screws on top of the seat section portion of the sleep surface. (On A, B, C, and E version beds, loosen the screws on top of the seat section portion of the sleep surface; then reach under the seat section, and rotate the two locks securing the seat section to the sleep surface.)

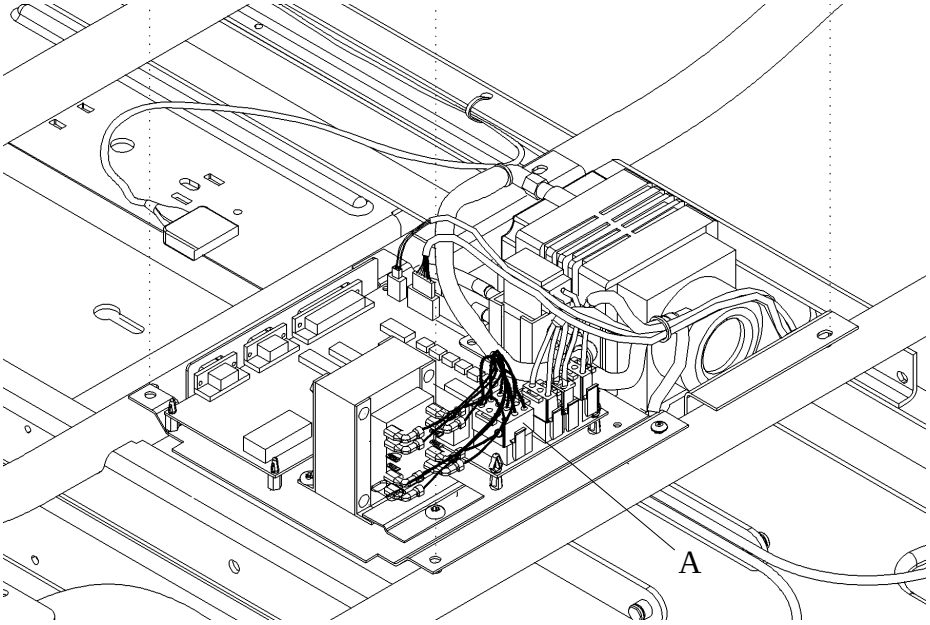
7. Place the seat section on either the head or foot sleep surface.

8. Remove the four screws securing the cover to the bed and remove the cover.

9. Inspect the transformer wiring assembly. Repair any broken or damaged wires. Disconnect and then connect the transformer wiring assembly connector J/P118 (A) to the air control board (see figure 2-19 on page 2-69). Plug the bed into an appropriate power source, and perform the "Air System Self Diagnostic Test" on page 2-17. Only the six sleep surface LEDs (PRESSURE RELIEF, HEEL RELIEF 1, HEEL RELIEF 2, HEEL RELIEF 3, COMFORT, and FIRMER) are flashing.

   Yes **No**
   ↓ → Return the bed to its normal operating condition. Go to "Final Actions" on page 2-21.

Figure 2-19. Transformer/Air Control Board



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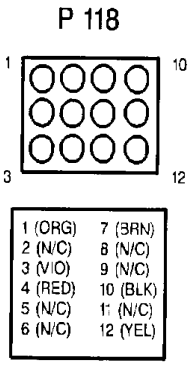
10. Measure the AC voltage between pins 3 and 12 on connector P118 (see figure 2-20 on page 2-69). The voltage is greater than 20V AC.

Yes **No**
↓ → Go to step 13.

Figure 2-20. Connector J/P118 Pins



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11. Replace the air control board. This solves the problem.

Yes **No**
↓ → Go to step 13.

2

12. Return the bed to its normal operating condition. Then, go to “Final Actions” on page 2-21.

13. Measure the AC voltage between pins 10 and 1 on the connector P118. The voltage is greater than 100V AC.

    Yes **No**
    ↓ → Replace fuse F2 on the air control board. If this solves the problem, return the bed to its normal operating condition. Then, go to “Final Actions” on page 2-21; otherwise, go to step 14.

14. Replace the air control board. This solves the problem.

    Yes **No**
    ↓ → Go to step 20.

15. Return the bed to its normal operating condition. Then, go to “Final Actions” on page 2-21.

16. The last two sleep surface LEDs (SOFTER and AUTO FIRM) are flashing.

    Yes **No**
    ↓ → Go to step 19.

17. Replace the air control board. This solves the problem.

    Yes **No**
    ↓ → Go to step 20.

18. Return the bed to its normal operating condition then go to “Final Actions” on page 2-21.

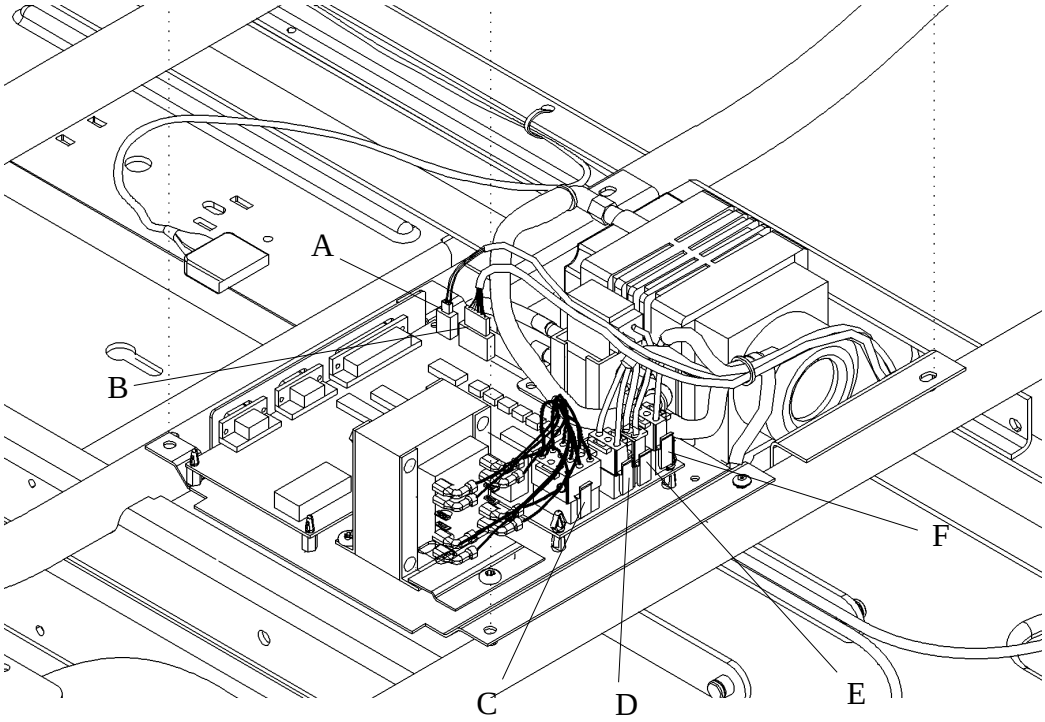
19. All eight sleep surface LEDs are flashing.

    Yes **No**
    ↓ → Replace the air control board. Return the bed to its normal operating condition. Then, go to “Final Actions” on page 2-21.

20. Disconnect and inspect the air control board wiring assembly. Repair any broken or damaged wires. Connect the air control board wiring assembly to connector P110 (F) on the air control board (see figure 2-21 on page 2-71). Perform the "Air System Self Diagnostic Test" on page 2-17. All eight LEDs are flashing.

    Yes **No**
    ↓ → Return the bed to its normal operating condition. Then, go to "Final Actions" on page 2-21.

Figure 2-21. Air Control Board Connections



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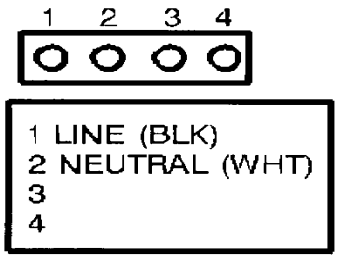
21. Measure the AC voltage between pin 1 and 2 on P110 (F). The voltage is greater than 100V AC.

    Yes **No**
    ↓ → Go to step 24.

2

Figure 2-22. J/P110 Connector



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22. Replace the air control board. This solves the problem.

    Yes **No**
    ↓ → Go to step 24.

23. Return the bed to its normal operating condition. Then, go to "Final Actions" on page 2-21.

24. Remove the foot end dust cover. Measure the AC voltage between pin 1 and 2 on P101 (A) located on the power supply board (see figure 2-23 on page 2-73). The voltage is greater than 100V AC.

    Yes **No**
    ↓ → Check the line filter connections, the power plug connections, and the power source. If this solves the problem, return the bed to its normal operating condition. Then, go to "Final Actions" on page 2-21; otherwise, go to step 27.

25. Replace the power cable. This solves the problem.

    Yes **No**
    ↓ → Go to step 27.

26. Return the bed to its normal operating condition. Then, go to "Final Actions" on page 2-21.

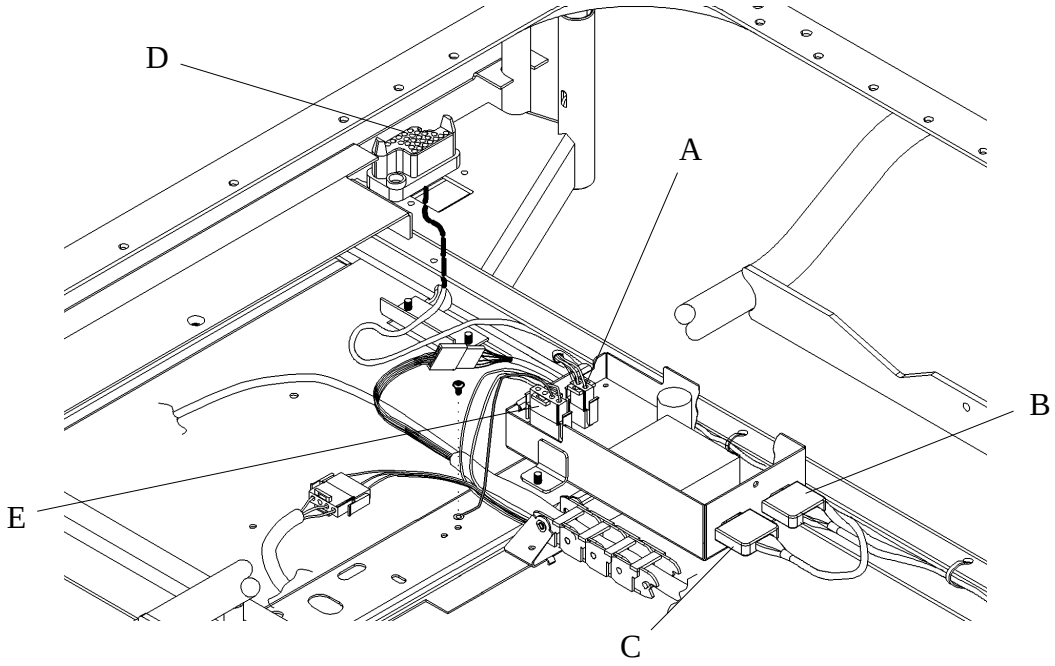
27. Check the voltage at J28-1 and J28-2 on the power supply board. The voltage is greater than 100V AC.

    Yes **No**
    ↓ → Inspect the connector J28 for bent or recessed pins. Replace or repair damaged pins. Check the connections on the cable connected between J/P28 and J/P3 on the voltage control board. Check the fuse on the high voltage/power/control board. Replace the fuse. If this solves the problem, go to step 29.

28. Replace the fuse F2 on the power supply board or the power supply board.

29. Return the bed to its normal operating condition. Go to “Final Actions” on page 2-21.

Figure 2-23. Power Supply Board



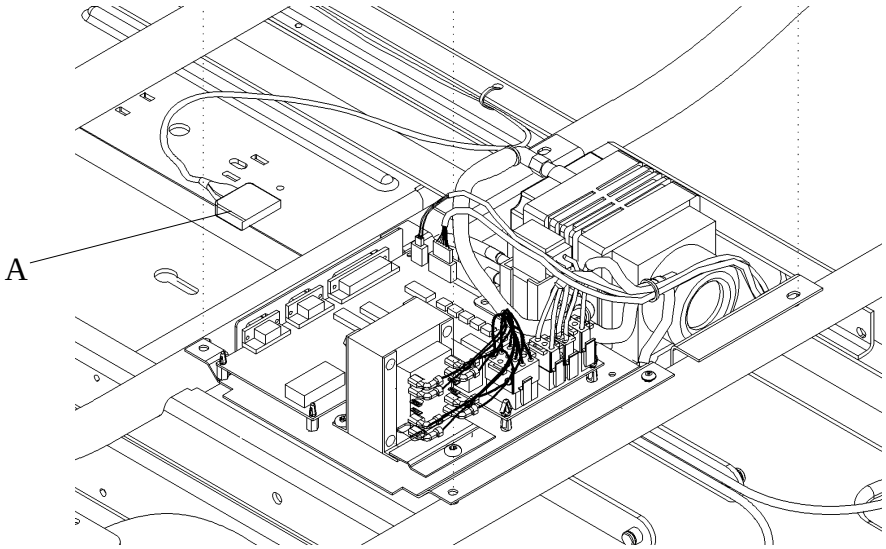
2.21 ZoneAire Sleep Surface LON Communication Error—Error Code 2-7

CAUTION:
Ensure that your hands are clean, and handle the P.C. boards by their edges **only** to prevent component damage. Wear an appropriate static strap when working with electronics. Equipment damage can occur. See “P.C. Boards” on page 6-4 for additional information.

1. Inspect the connector J112 (A) on the air control board for broken, bent, or missing pins (see figure 2-24 on page 2-74). Repair or replace broken, bent, or missing pins. Connect the connector. This solves the problem.

   Yes **No**
   ↓ → Go to step 3.

Figure 2-24. Connector J/P112 on the Air Control Board



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2. Go to “Final Actions” on page 2-21.

3. Inspect for broken, bent, or missing pins on connector J/P103 (B) (see figure 2-23 on page 2-73). Repair or replace the broken, bent, or missing pins. This solves the problem.

   Yes **No**
   ↓ → Go to step 5.

4. Go to “Final Actions” on page 2-21.

5. Inspect for broken, bent, or missing pins on the connector J/P102 (C). Repair or replace the broken, bent, or missing pins. This solves the problem.

   Yes **No**
   ↓ → Go to step 7.

6. Go to “Final Actions” on page 2-21.

7. Inspect for broken, bent, or missing pins on the footboard connector J40 (D). Repair or replace the broken, bent, or missing pins. This solves the problem.

   Yes **No**
   ↓ → Replace the LON cable. If this solves the problem, go to “Final Actions” on page 2-21; otherwise, go to step 9.

8. Go to “Final Actions” on page 2-21.

9. Check for DC power at the air control board. DC power is available to the air control board.

   Yes **No**
   ↓ → Go to step 18.

10. Replace the air control board. This solves the problem.

    Yes **No**
    ↓ → Go to step 18.

11. Go to “Final Actions” on page 2-21.

12. Replace the footboard. This solves the problem.

    Yes **No**
    ↓ → Go to step 18.

13. Go to “Final Actions” on page 2-21.

14. Replace the LON cable. This solves the problem.

    Yes **No**
    ↓ → Go to step 16.

15. Go to “Final Actions” on page 2-21.

16. Replace the MF Bednet cable. This solves the problem.

    Yes **No**
    ↓ → Go to step 18.

17. Go to “Final Actions” on page 2-21.

18. Check for power at the connector J/P28 (E) on the power supply board. Power is available.

    Yes **No**
    ↓ → Check the connections on the cable connected between J/P28 and J/P3 on the voltage control board if it is a 4-motor bed.

19. Replace the power supply board. This solves the problem.

    Yes **No**
    ↓ → Go to step 21.

20. Go to “Final Actions” on page 2-21.

21. Replace the LON cable. This solves the problem.

    Yes **No**
    ↓ → Check the bed’s high voltage board.

22. Go to “Final Actions” on page 2-21.

2.22 Key Stuck Closed—Error Code 1-2

CAUTION:
Ensure that your hands are clean, and handle the P.C. boards by their edges **only** to prevent component damage. Wear an appropriate static strap when working with electronics. Equipment damage can occur. See “P.C. Boards” on page 6-4 for additional information.

1. Replace the membrane interface P.C. board located in the footboard control panel.

2. Go to “Final Actions” on page 2-21.

2.23 ZoneAire Sleep Surface Does Not Work

SHOCK HAZARD:

Unplug the bed from its power source. Failure to do so could result in personal injury or equipment damage.

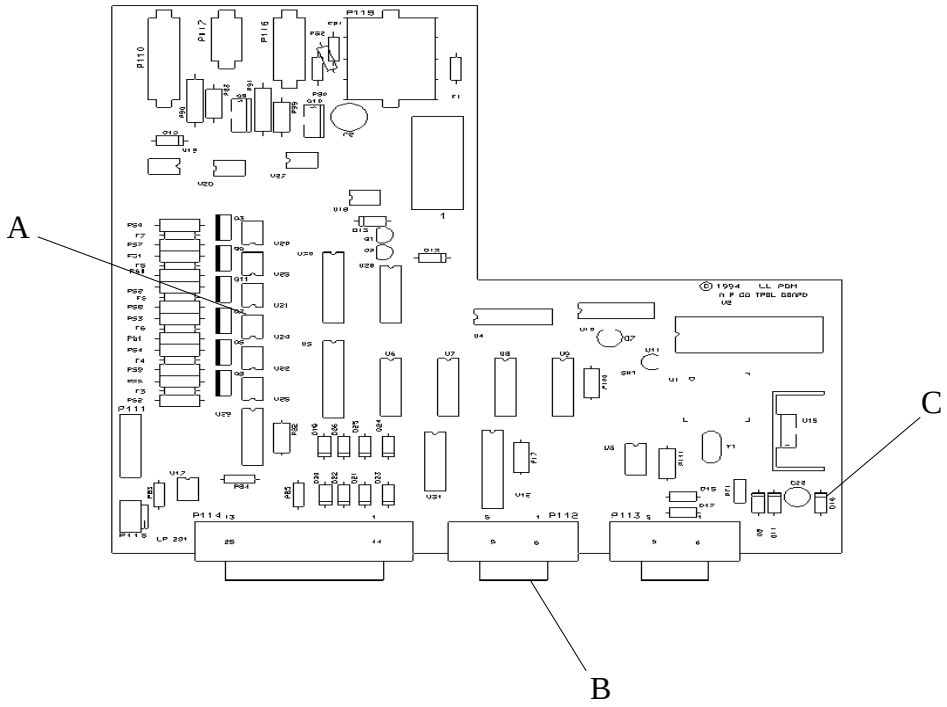
CAUTION:

Ensure that your hands are clean, and handle the P.C. boards by their edges **only** to prevent component damage. Wear an appropriate static strap when working with electronics. Equipment damage can occur. See “P.C. Boards” on page 6-4 for additional information.

1. Unplug the bed from its power source.
2. Remove the footboard control panel.
3. Raise the foot section of the bed.
4. Remove the foot cover.
5. Install the footboard control panel, and plug the bed into an appropriate power source.
6. The LED, Q7 (A) on the air control board is flashing (see figure 2-25 on page 2-79).

   Yes **No**
   ↓ → Go to step 8.

Figure 2-25. Air Control Board Layout



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7. Replace the air control board. Go to “Final Actions” on page 2-21.

8. Connect the negative lead of the voltmeter to the anode of D16 (C) and measure the voltage at P112, Pin 2 (B). The voltage measures 8V DC or more.

   Yes **No**
   ↓ → Go to step 19.

9. Replace the LON cable.

   This solves the problem.

   Yes **No**
   ↓ → Go to step 11.

10. Return the bed to its normal operating condition, and go to “Final Actions” on page 2-21.

2

11. Replace the MF Bednet cable. This solves the problem.

    Yes **No**
    ↓ → Go to step 13.

12. Return the bed to its normal operating condition, and go to "Final Actions" on page 2-21.

13. Replace the footboard control panel. This solves the problem.

    Yes **No**
    ↓ → Go to step 15.

14. Return the bed to its normal operating condition, and go to "Final Actions" on page 2-21.

15. Replace the air control board. This solves the problem.

    Yes **No**
    ↓ → Go to step 17.

16. Return the bed to its normal operating condition, and go to "Final Actions" on page 2-21.

17. Replace the CPR switch assembly. This solves the problem.

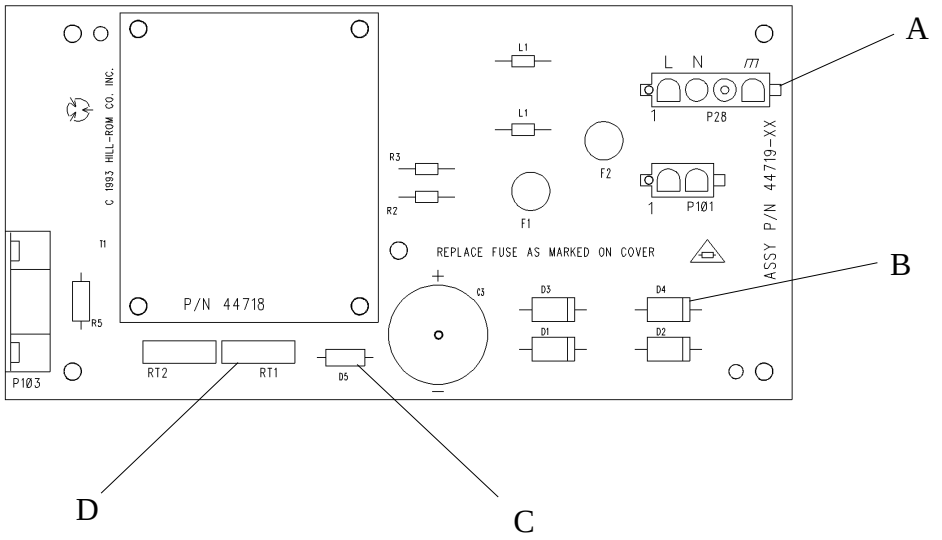
    Yes **No**
    ↓ → Go to step 19.

18. Return the bed to its normal operating condition, and go to "Final Actions" on page 2-21.

19. Measure the AC voltage between pin 1 and pin 2 of J/P28 (A) on the power supply board (see figure 2-26 on page 2-81). The voltage measures 100V AC or more.

    Yes **No**
    ↓ → Check the high voltage board.

Figure 2-26. Power Supply Board Layout



m026d289

20. Measure the DC voltage across the diode D5 (C) on the power supply board. The voltage measures greater than 8V DC.

    Yes ↓ **No** → Go to step 23.

21. Replace the LON cable. This solves the problem.

    Yes ↓ **No** → Go to step 23.

22. Return the bed to its normal operating condition, and go to "Final Actions" on page 2-21.

23. Measure the AC voltage between the anode of diode D4 (B) and RT1, Pin 1 (D). The voltage measures greater than 6V AC.

    Yes ↓ **No** → Replace the power supply board. Go to step 24.

24. Return the bed to its normal operating condition, and go to "Final Actions" on page 2-21.

2.24 Scale Display

2

CAUTION:
Ensure that your hands are clean, and handle the P.C. boards by their edges **only** to prevent component damage. Wear an appropriate static strap when working with electronics. Equipment damage can occur. See "P.C. Boards" on page 6-4 for additional information.

1. When initial power is supplied to the bed scale:
   a. If "E" version bed or prior, the scale will display -----. A five second beep will sound as the bed performs a memory check.
   b. If "F" version bed or later and the bed is not in the correct weigh position, the scale will display ----- followed by *NOT IN WT POSITION*.

2. If the bed is in the correct weigh position, the scale will display *0.0* followed by the correct weight reading . The scale displays *0.0* followed by the correct weight reading.

   Yes **No**
   ↓ → Bed is not in the correct weigh position. The scale will display ----- and *NOT IN WT POSITION*. Adjust the bed position if the bed is not in the correct weigh position.

NOTE:
If the analog board is replaced, the bed automatically sets the weigh window to the **low weigh position**.

3. Go to "Final Actions" on page 2-21.

Err0 Display

1. The scale displays *Err0*, and ----- alternately. The analog board cable is disconnected or defective. Replace the defective component. This solves the problem.

   Yes **No**
   ↓ → The analog board is defective. Replace the analog board.

2. Go to "Final Actions" on page 2-21.

Err1 Display

1. The scale displays *Err1,* and the scale beeps ten times. An error has occurred during the memory check. Calibrate the scale to correct this problem (see "New Patient Weighing" on page 1-52). This solves the problem.

   Yes **No**
   ↓ → Check the scale calibration procedures (see "Changing the Items On the Bed" on page 1-53).

2. Go to "Final Actions" on page 2-21.

Err2 Display

1. The scale displays *Err2,* and the scale beeps ten times. The scale has never been calibrated. Calibrate the scale to correct this problem (see "New Patient Weighing" on page 1-52). This solves the problem.

   Yes **No**
   ↓ → Check the scale calibration procedures (see "Changing the Items On the Bed" on page 1-53).

25. Go to "Final Actions" on page 2-21.

NOTES:

Chapter 3
Theory of Operation

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3

NOTES:

Component Locations

To locate components on the Advance series bed, use table 3-1 on page 3-5 along with figure 3-1 on page 3-7. To locate the ZoneAire Sleep Surface option components, use table 3-2 on page 3-8 with figure 3-2 on page 3-8. To locate and identify the power supply board jack/plugs, use table 3-3 on page 3-9 with figure 3-3 on page 3-9. To locate and identify the air control board assembly jack/plugs, use table 3-4 on page 3-10 with figure 3-4 on page 3-10.

Table 3-1. Component Location Identification

Symbol	Component	Component Location
A	Electronics pan	Located under the center of the bed
B	High voltage power control board	Located in the electronics pan under the center of the bed
C	Logic control board	Located in the electronics pan under the center of the bed
D	Night light board	Located in the electronics pan under the center of the bed
E	Motor capacitors	Located in the electronics pan under the center of the bed
F	Noise filter	Located in the electronics pan under the center of the bed
G	Patient control board	Located on the inside of the head siderails
H	Siderail interface board	Located in the bottom channel of the head siderails
I	Nurse control assembly	Located on the outside of the head siderails
J	SideCom Communication System housing	Located in the channel of the head siderails
K	Load cell	Located on top of the base frame assembly inside of the load cell covers
L	Air system control board (DynamicAire Sleep Surface only)	Located at the left foot end of the bed under the foot motor cover
M	Air compressor (DynamicAire Sleep Surface only)	Located under the seat section of the sleep surface

Symbol	Component	Component Location
N	Solenoids (DynamicAire Sleep Surface only)	Located under the seat section of the sleep surface
O	Power supply board (ZoneAire Sleep Surface only)	Located at the right foot end of the bed under the foot motor cover
P	Transformer (ZoneAire Sleep Surface only)	Located under the seat section of the sleep surface
Q	Air control board (ZoneAire Sleep Surface only)	Located under the seat section of the sleep surface
R	Air pump (ZoneAire Sleep Surface only)	Located under the seat section of the sleep surface
S	Nurse control panel	Located at the foot end of the bed in the foot end panel
T	Junction box board	Located under the frame of the bed at the head end under the testport cable
U	Testport cable	Located under the frame of the bed at the head end
V	Scale-micro board	Located at the nurse control panel inside of the foot panel
W	Scale display board	Located at the nurse control panel inside of the foot panel
X	Scale analog board	Located under the head end cross channel of the base frame of the bed
Y	Bed exit module	Located in the left outside portion of the head siderail

Figure 3-1. Component Location

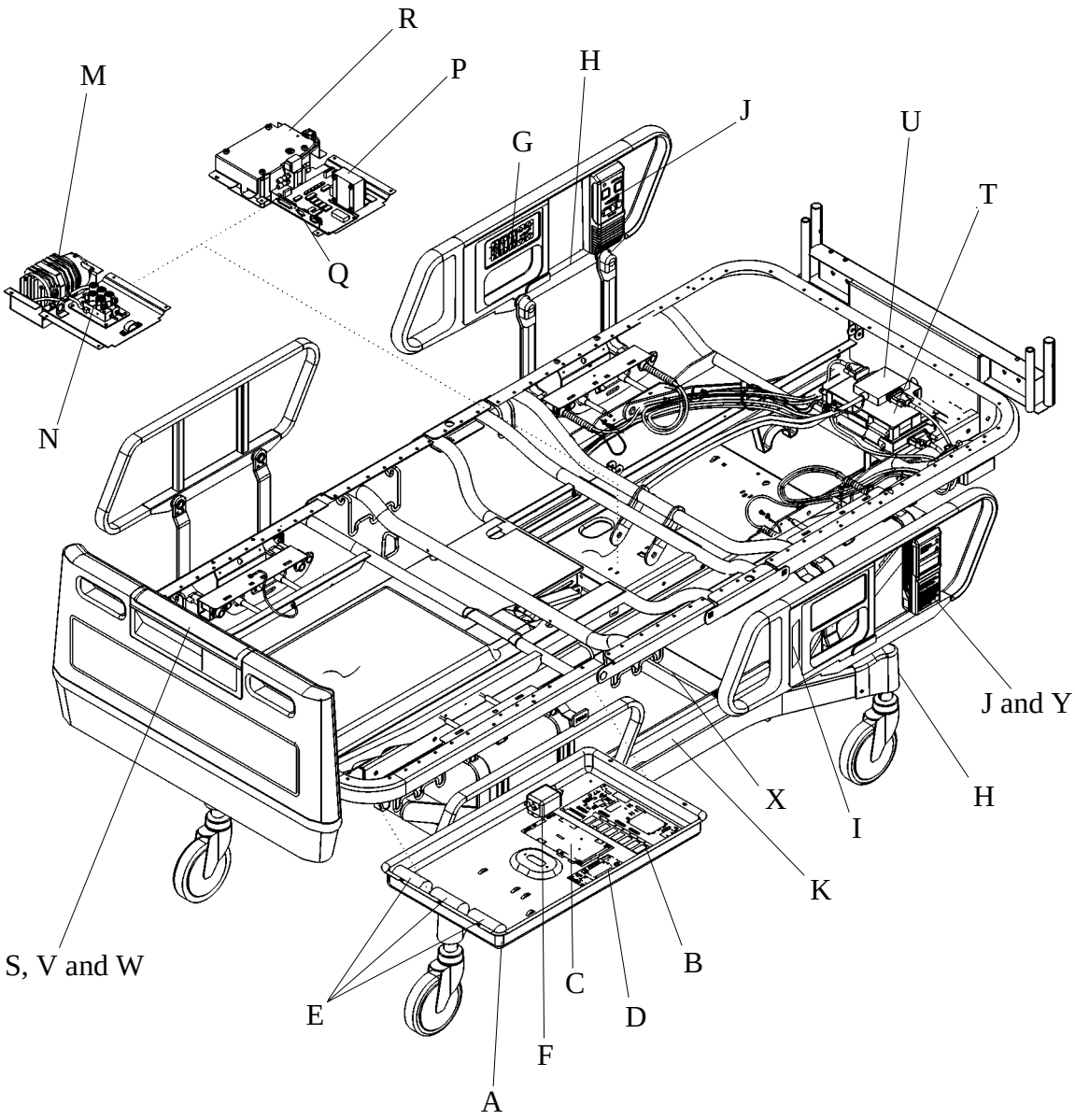

Table 3-2. ZoneAire Sleep Surface Part Component Identification

Symbol	Component Description
A	Air control cover
B	Air control board assembly
C	Switching valve assembly
D	CPR switch
E	Transformer
F	Power supply board
G	Power supply box cover

Figure 3-2. ZoneAire Sleep Surface Option Electrical Component Locations

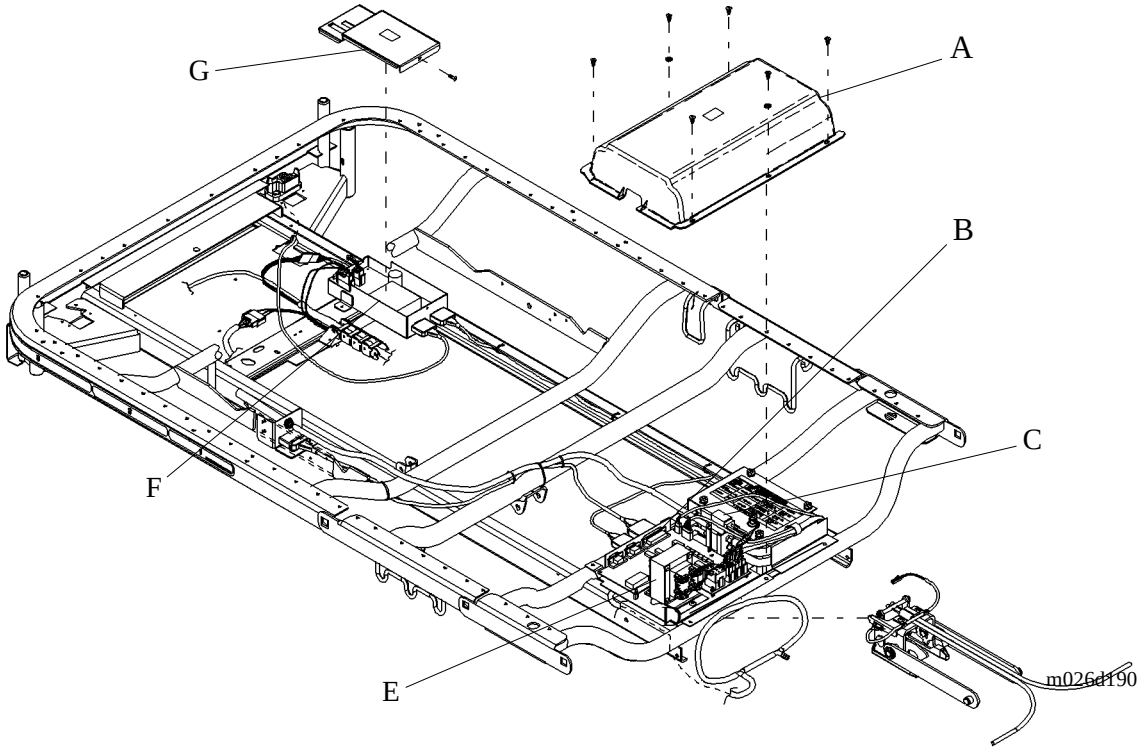

Table 3-3. Power Supply Board Jack/Plug Identification

Symbol	Description
A	J/P101
B	J/P103
C	J/P102
D	J/P106
E	J/P28
F	J40

Figure 3-3. Power Supply Board Jack/Plug Location

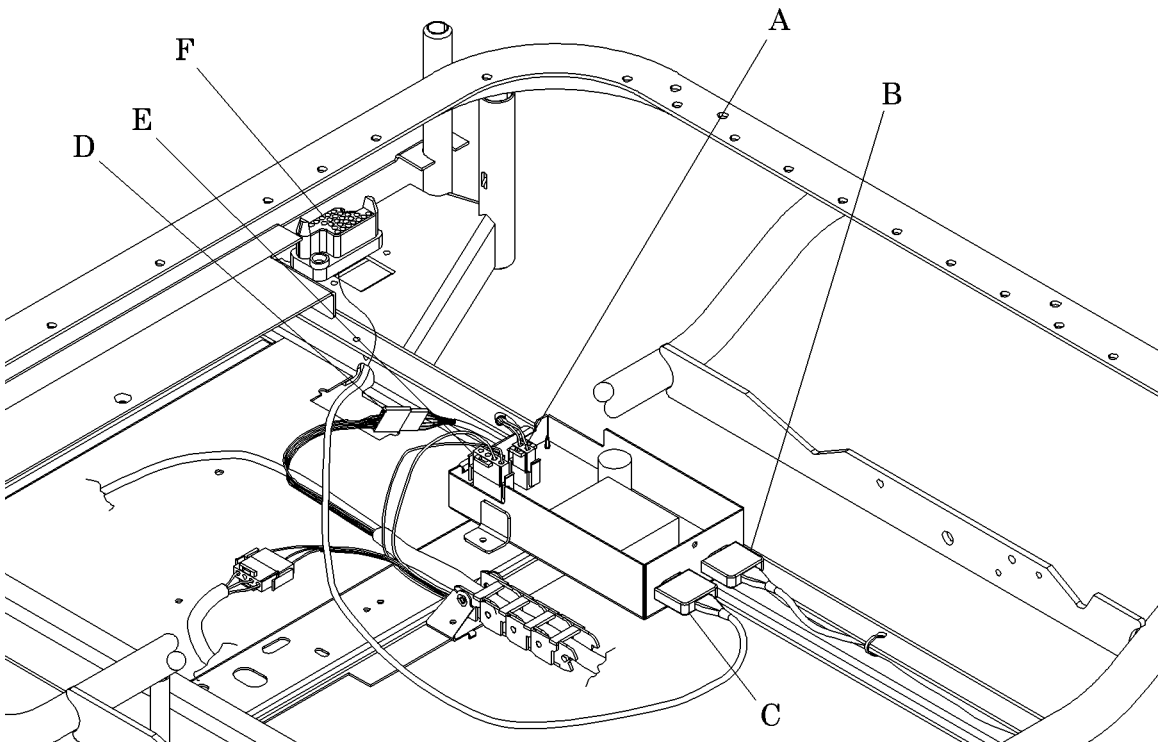

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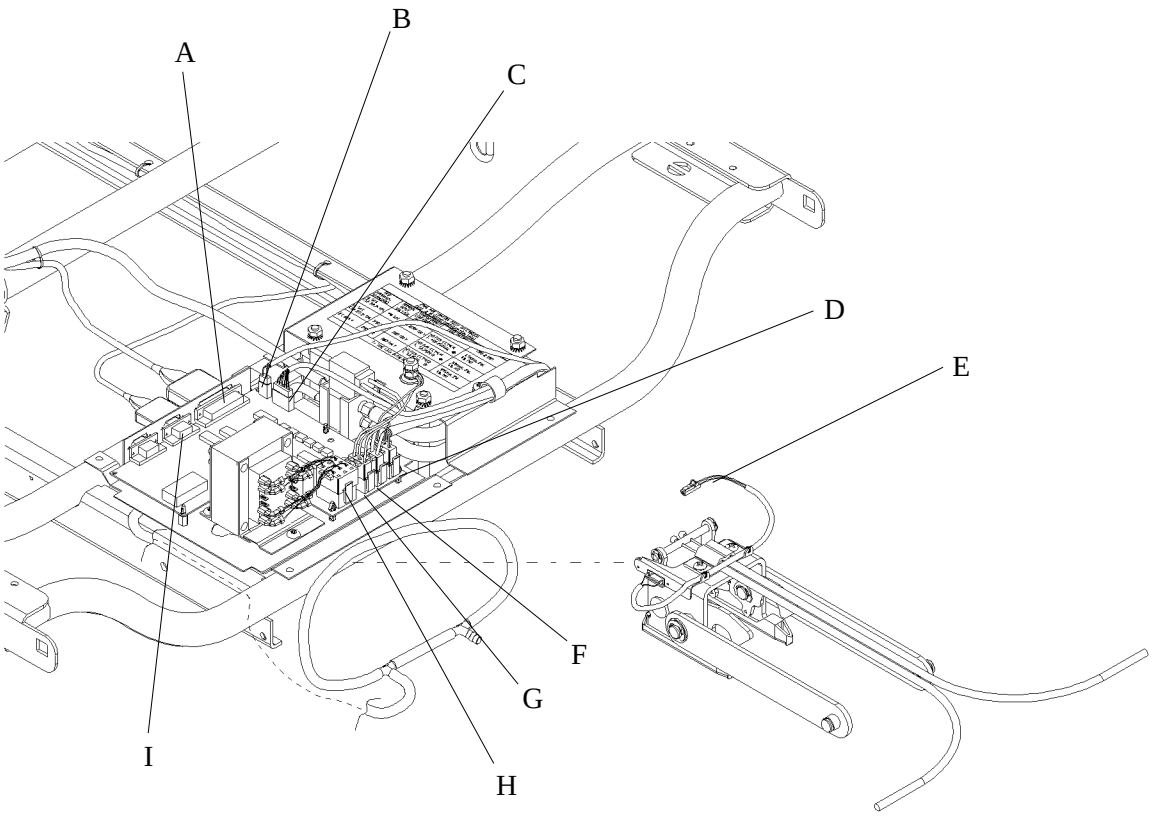
Table 3-4. Air Control Board Assembly Jack/Plug Identification

Symbol	Description
A	J/P114
B	J/P115
C	J/P111
D	J/P110
E	J115
F	J/P117
G	J/P116
H	J/P118
I	J/P112

Figure 3-4. Air Control Board Assembly Jack/Plug Location



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Wiring Diagrams

The following wiring diagrams detail the electrical circuits and the circuit boards on the Advance Series Bed. Use these diagrams as troubleshooting aids.

Testport Cable

Figure 3-5 on page 3-11 details the testport and testport cables P/N 44185, and P/N 46204-01. Figure 3-6 on page 3-11 details the testport cable P/N 60251-01. Use these graphics as troubleshooting aids.

Figure 3-5. Testport Cable—P/N 44185 and P/N 46204-01

Refer to fold-out FO 3-1 at the rear of this manual.

Figure 3-6. Testport Cable—P/N 60251-01

Refer to fold-out FO 3-2 at the rear of this manual.

Figure 3-7. Schematic Wiring Diagram for 115 Volt Models for “A” and “B” Version Beds—P/N 44082

Refer to fold-out FO 3-3 at the rear of this manual.

Figure 3-8. Schematic Wiring Diagram for 115 Volt Models for "C" and "D" Version Beds—P/N 62351

Refer to fold-out FO 3-21 at the rear of this manual.

Figure 3-9. Schematic Wiring Diagram for Night Light Board—P/N 48921

Refer to fold-out FO 3-4 at the rear of this manual.

Figure 3-10. Schematic Wiring Diagram for 230 Volt Model Bed—P/N 44508

Refer to fold-out FO 3-5 at the rear of this manual.

Figure 3-11. Schematic Wiring Diagram for ZoneAire Sleep Surface—P/N 45853

Refer to fold-out FO 3-6 at the rear of this manual.

Figure 3-12. High Voltage Control Board—P/N 42822-01/02/03

Refer to fold-out FO 3-7 at the rear of this manual.

Figure 3-13. Logic Control Board for "A", "B", "C", "D", and "E" Version Beds—P/N 44158-01/02/04/05

Refer to fold-out FO 3-8 at the rear of this manual.

Figure 3-14. SideCom Communication System for "A" Version Beds—P/N 44199

Refer to fold-out FO 3-9 at the rear of this manual.

Figure 3-15. SideCom Communication System for "B" and "C" Version Beds—P/N 44665

Refer to fold-out FO 3-10 at the rear of this manual.

Figure 3-16. Bed Exit—P/N 44482-01

Refer to fold-out FO 3-11 at the rear of this manual.

Figure 3-17. Display Board for “A”, “B”, “C”, “D”, and “E” Version Beds—P/N 39452

Refer to fold-out FO 3-12 at the rear of this manual.

Figure 3-18. Display Board “F” Version Beds—P/N 49584

Refer to fold-out FO 3-22 at the rear of this manual (P/N 49582).

Figure 3-19. Scale-Micro Board for “A”, “B”, “C”, “D”, and “E” Version Beds—P/N 39506-01

Refer to fold-out FO 3-13 at the rear of this manual.

Figure 3-20. Scale-Micro Board for “F” Version Beds—P/N 61205

Refer to fold-out FO 3-23 at the rear of this manual.

Figure 3-21. Analog Board for “A”, “B”, “C”, “D”, and “E” Version Beds—P/N 39369-01

Refer to fold-out FO 3-14 at the rear of this manual.

Figure 3-22. Analog Board for “F” Version Beds—P/N 497511

Refer to fold-out FO 3-24 at the rear of this manual (P/N 49749).

Figure 3-23. Logic Control Board for “E” and “F” Version Beds—P/N 61410

Refer to fold-out FO 3-15 at the rear of this manual.

Figure 3-24. DynamicAire Sleep Surface Air System Board—P/N 44047

Refer to fold-out FO 3-16 at the rear of this manual.

Figure 3-25. DynamicAire Sleep Surface Air System Board—P/N 46752

Refer to fold-out FO 3-17 at the rear of this manual.

Figure 3-26. ZoneAire Sleep Surface Sensor Control Board—P/N 44740

Refer to fold-out FO 3-18 at the rear of this manual.

Figure 3-27. ZoneAire Sleep Surface Air Control Board—P/N 44760 and 45944-01/02/03

Refer to fold-out FO 3-19.1 and FO 3-19.2 at the rear of this manual (2 sheets).

Figure 3-28. ZoneAire Sleep Surface Membrane Interface P.C. Board for “E” Version Beds and Prior—P/N 44805

Refer to fold-out FO 3-20 at the rear of this manual.

Figure 3-29. ZoneAire Sleep Surface Membrane Interface P.C. Board for “F” Version Beds—P/N 62738

Refer to fold-out FO 3-25 at the rear of this manual (P/N 62736).

Figure 3-30. ZoneAire Sleep Surface Air Control Board Assembly—P/N 44760-02

Refer to fold-out FO 3-19.1 and FO 3-19.2 at the rear of this manual (2 sheets).

Figure 3-31. Schematic Wiring Diagram—”F” Version Bed

Refer to fold-out FO 3-26 at the rear of this manual.

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Figure 3-32. Night Light With Scale—P/N 43200-01/02

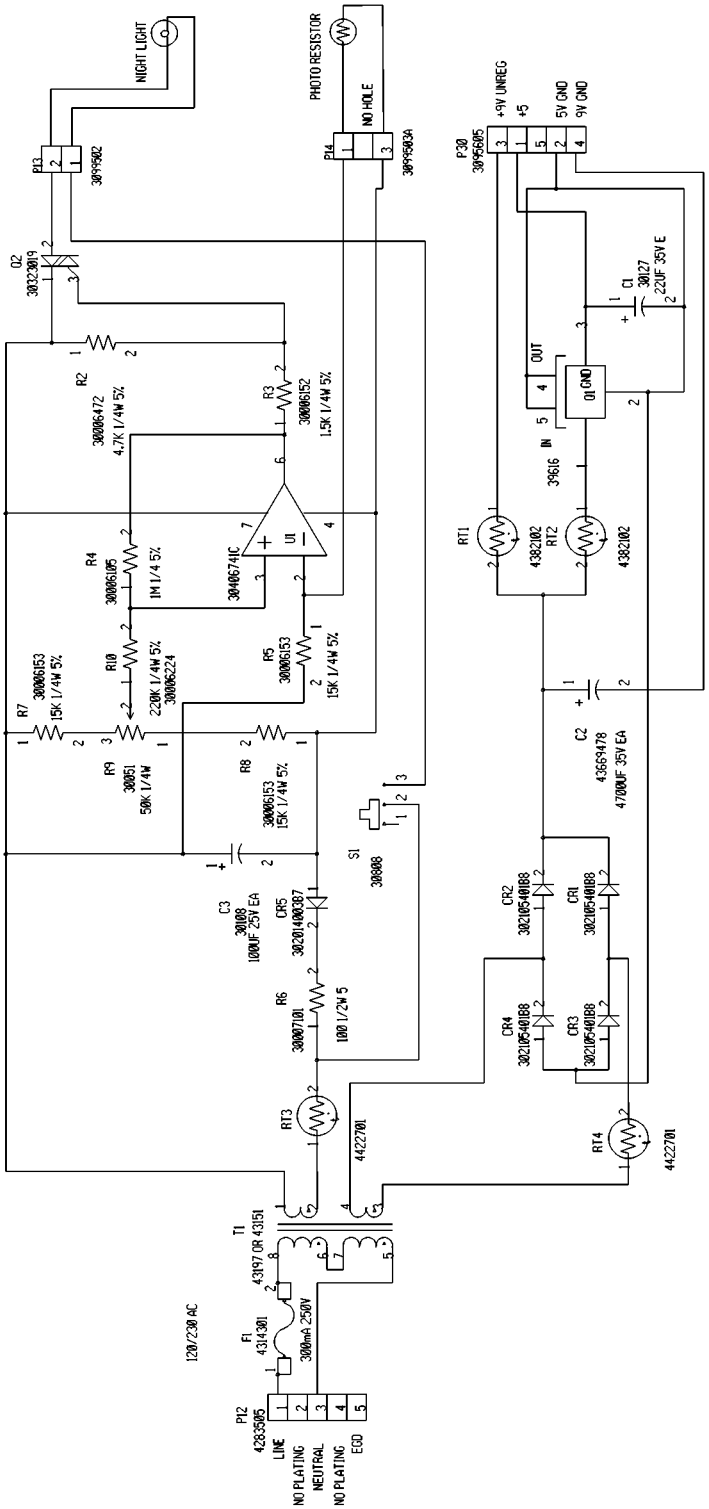

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Figure 3-33. Night Light Board—P/N 48921

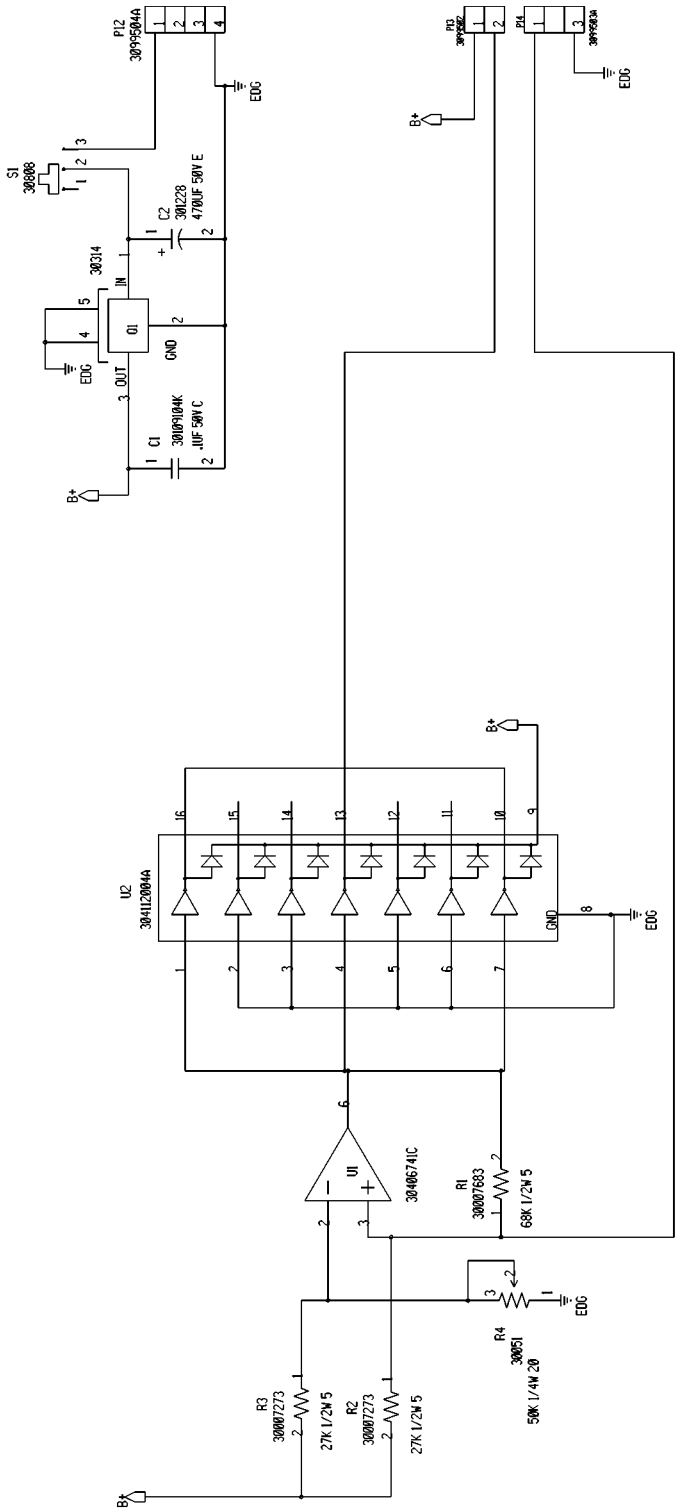

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**Figure 3-34. Patient Inner Control Board for "A" Version Beds—
P/N 44124-01/02/03/04/05/06**

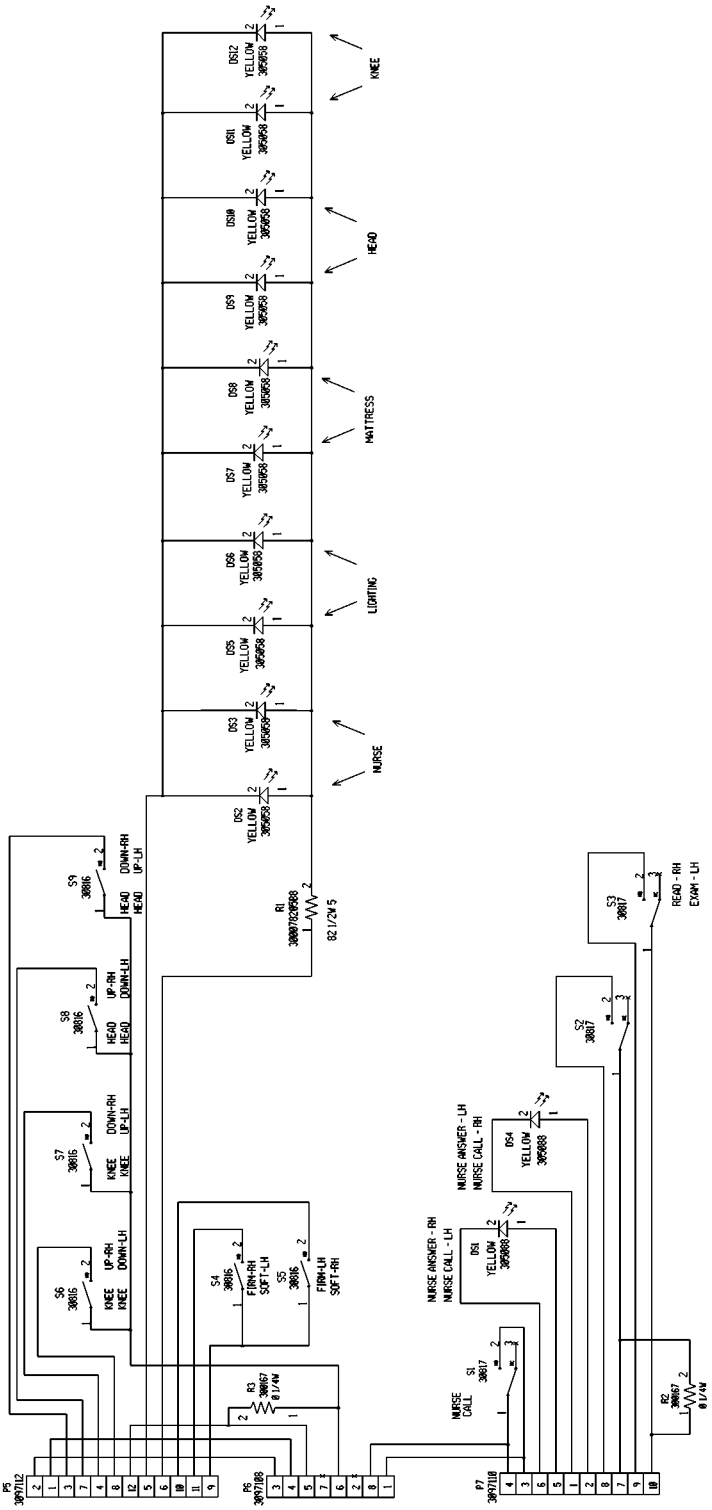

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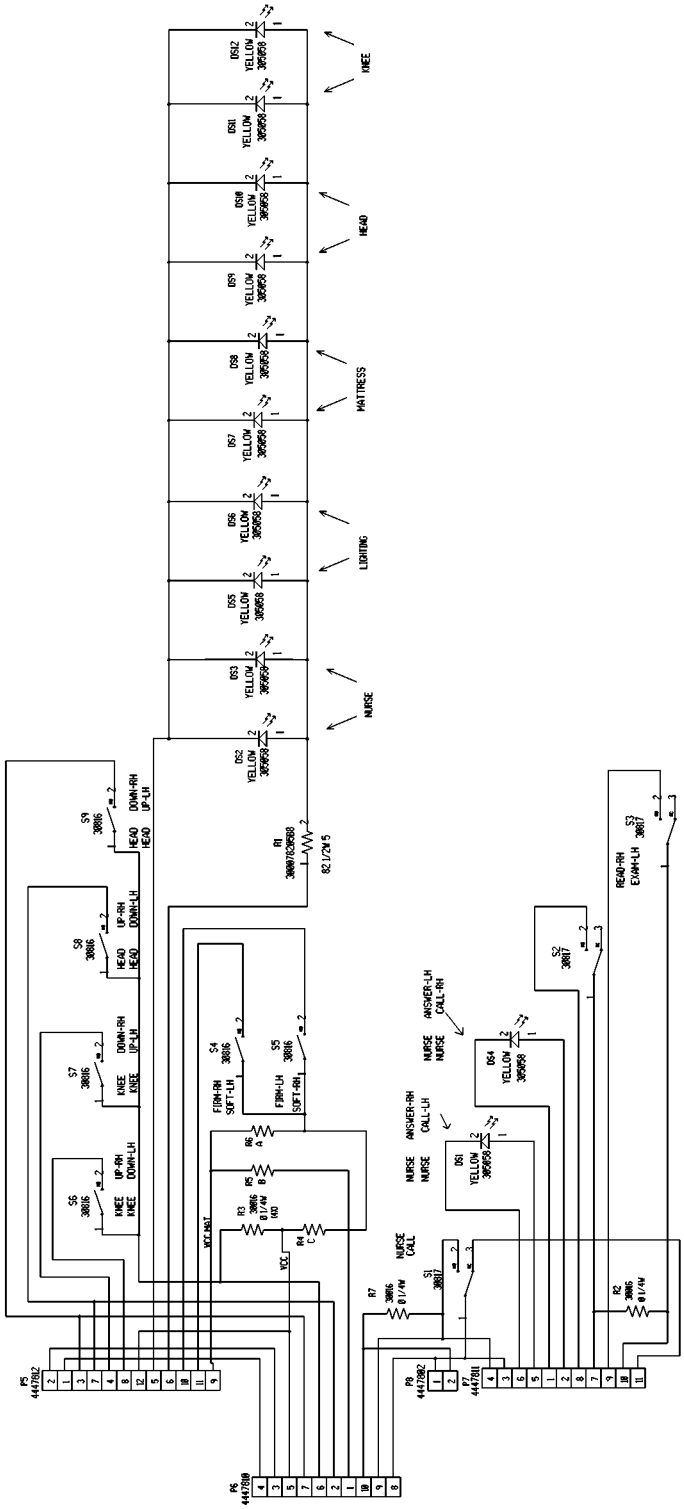
Figure 3-35. Patient Inner Control Board for "B" Version Beds—P/N 44581-01/02/03/04/05/06 and "C" Version Beds—P/N 45016-01/02/03/04/05/06



m026d182

Figure 3-36. Siderail Switch Assembly—P/N 44667

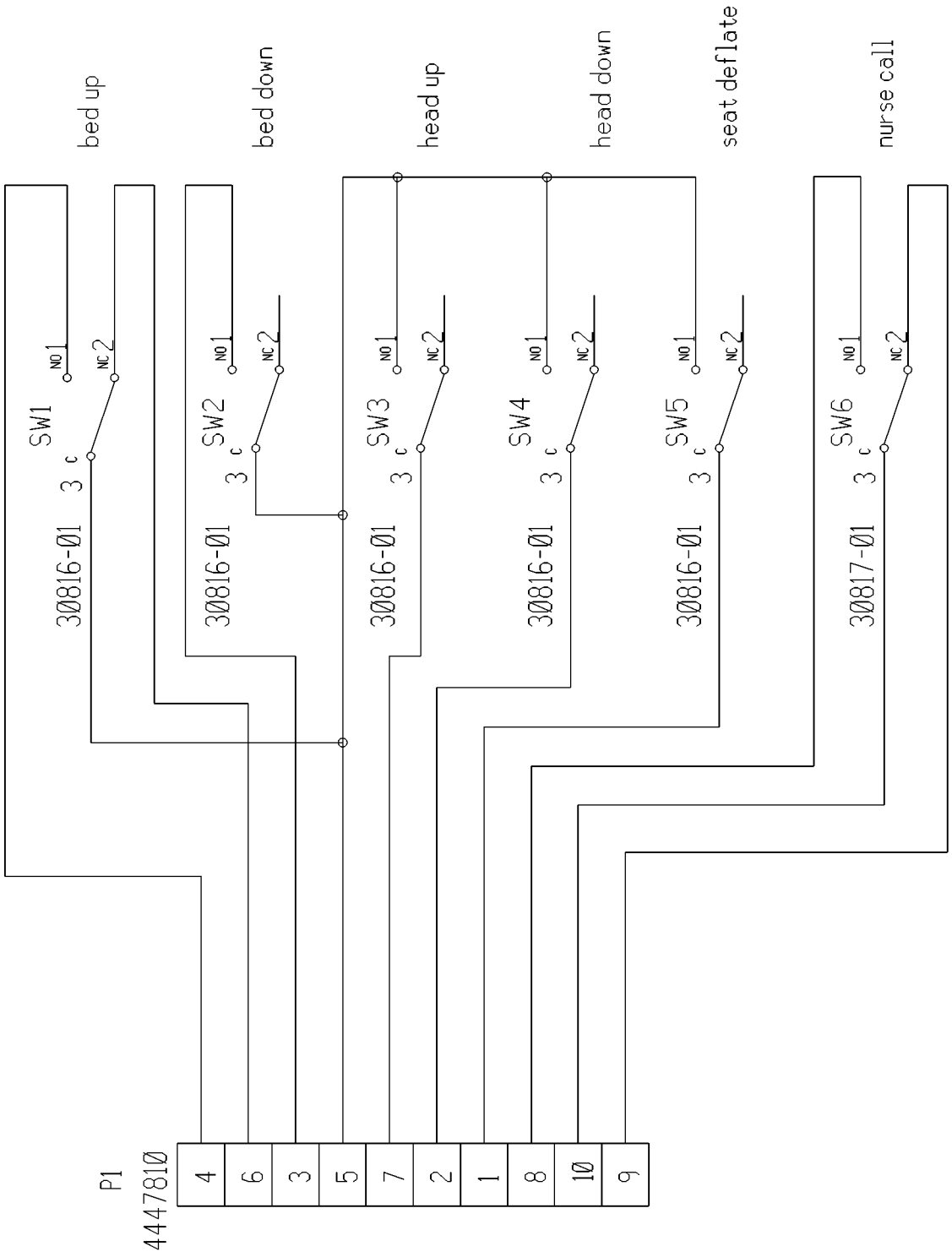


Figure 3-37. Siderail Interface Board—P/N 44578

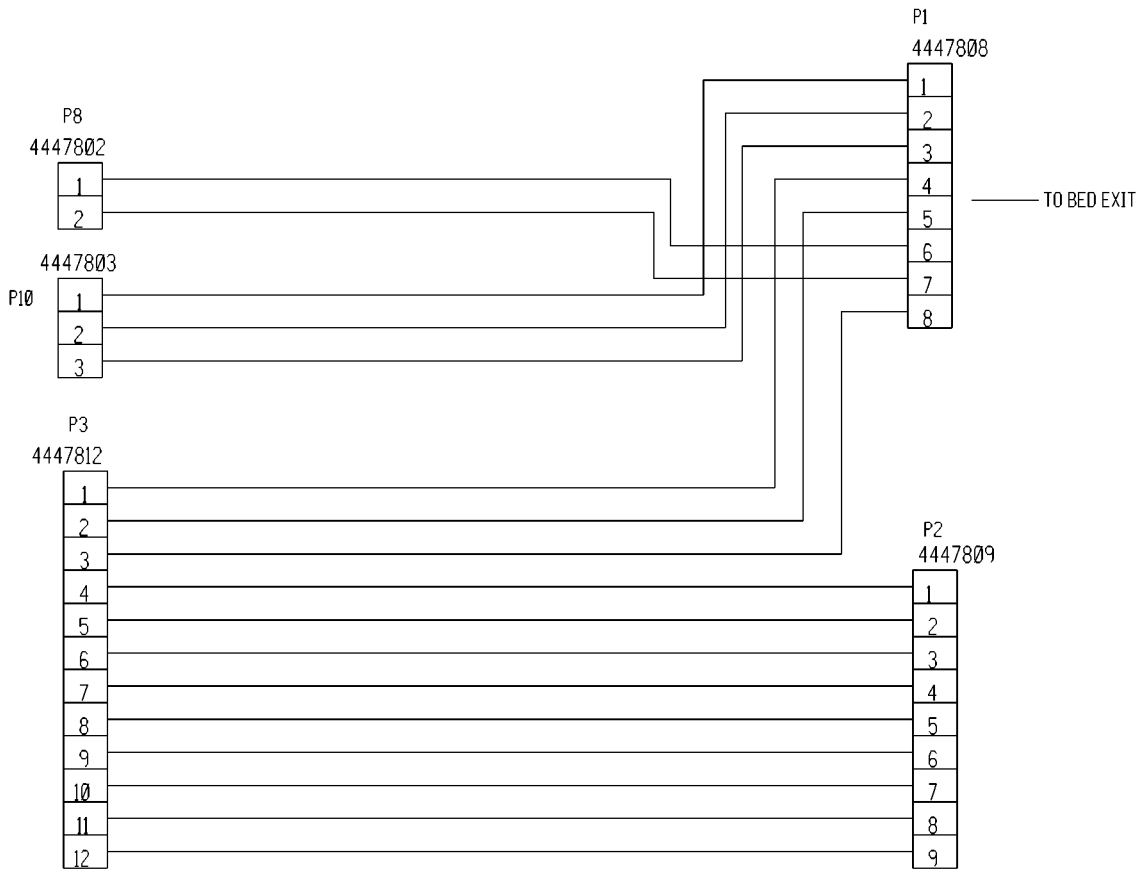


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Figure 3-38. Junction Box for “A” Version Beds—P/N 38350

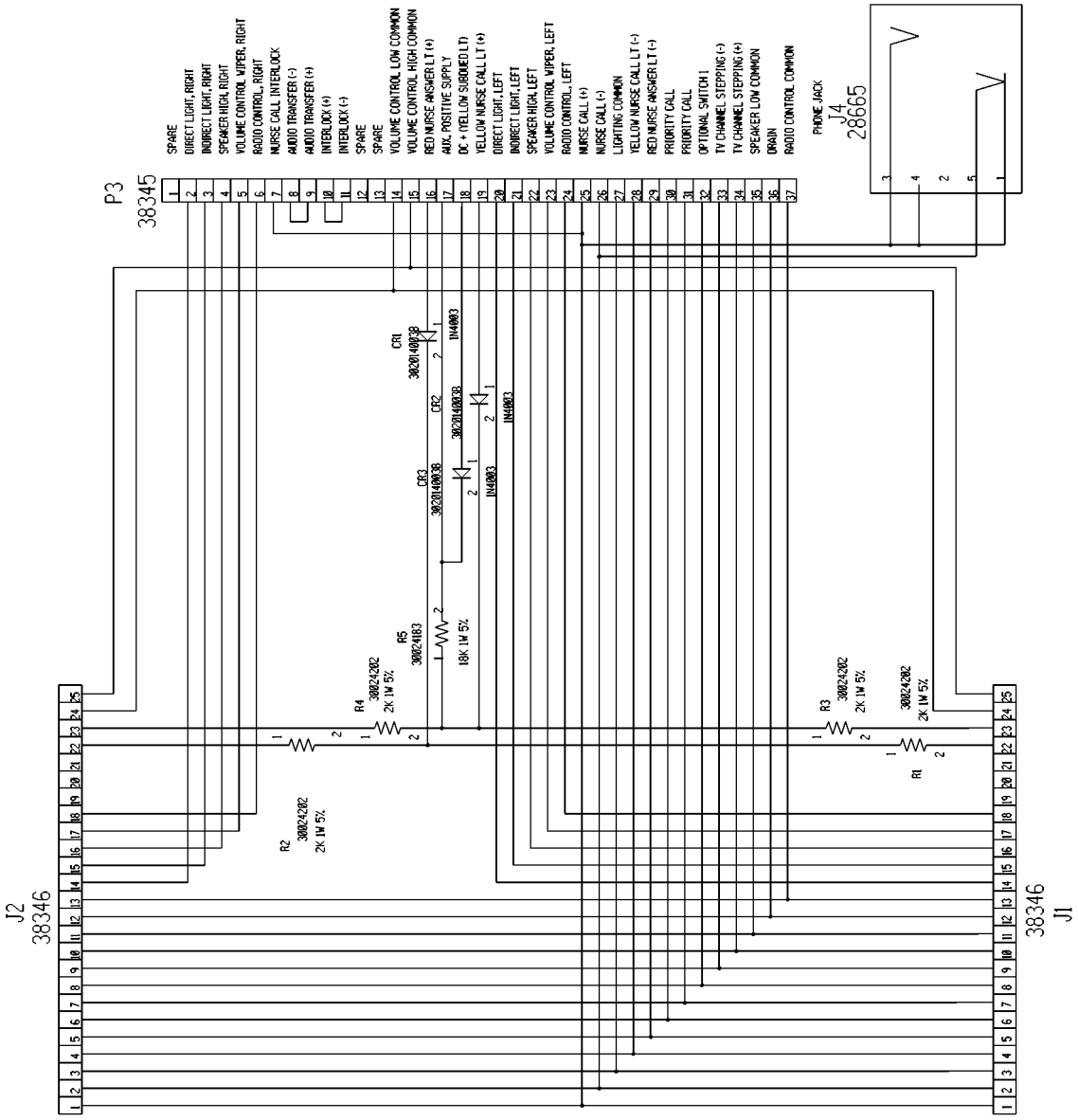

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Figure 3-39. Junction Box for "B" Version Beds—P/N 43853

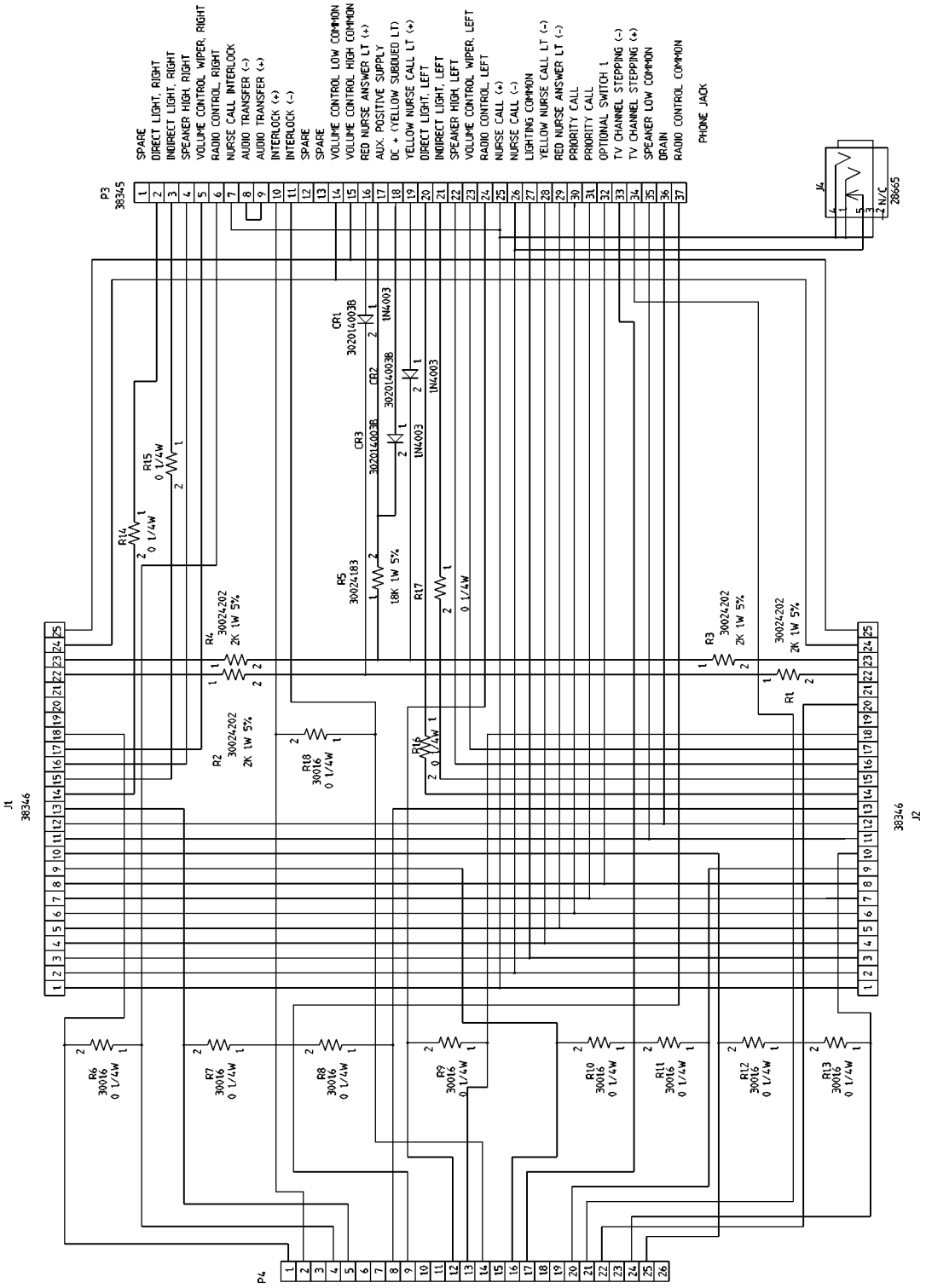

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Figure 3-40. Junction Box for “C” Version Beds—P/N 45588-02

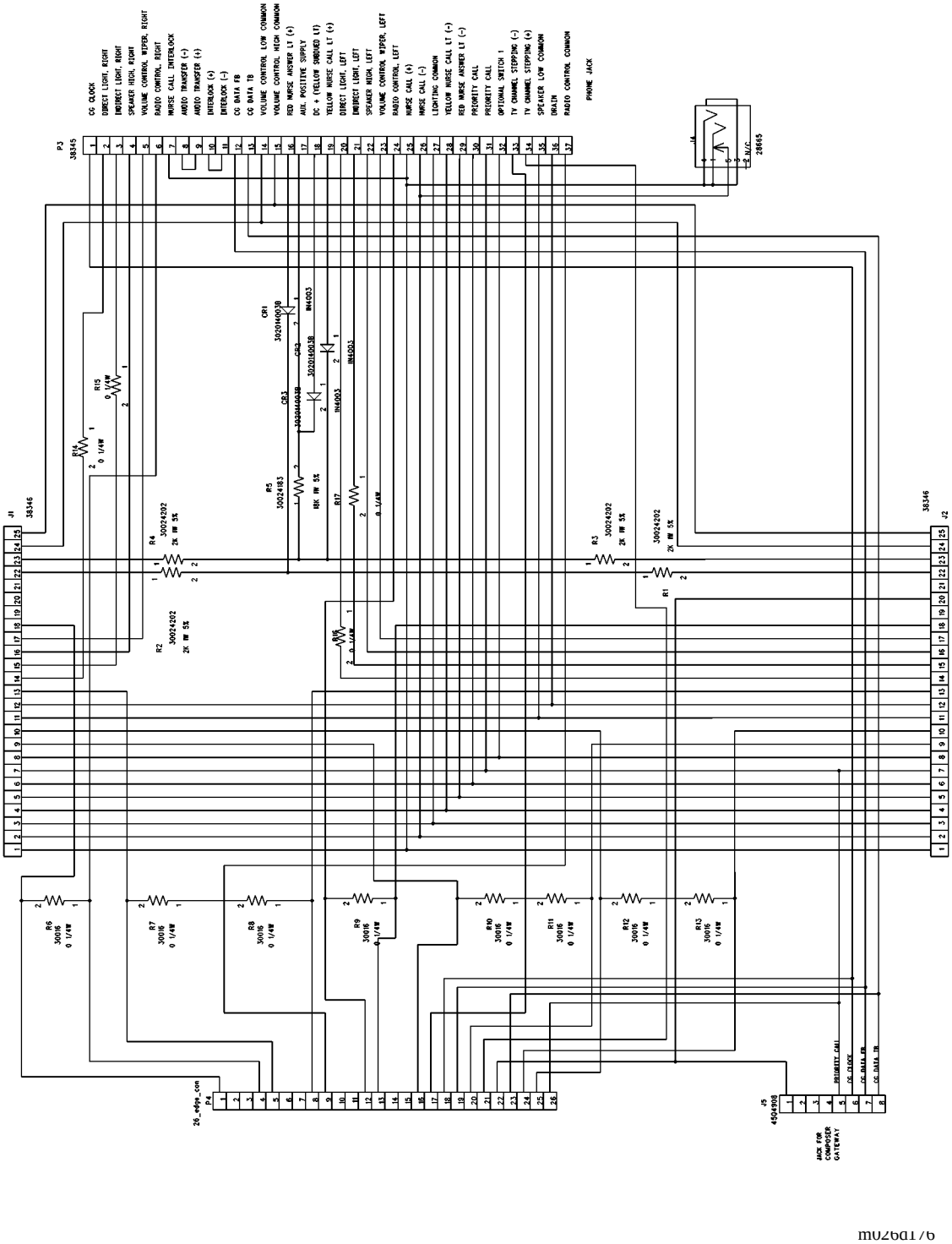

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Figure 3-41. Nurse Control Flex Circuit—P/N 43154-01/02/03

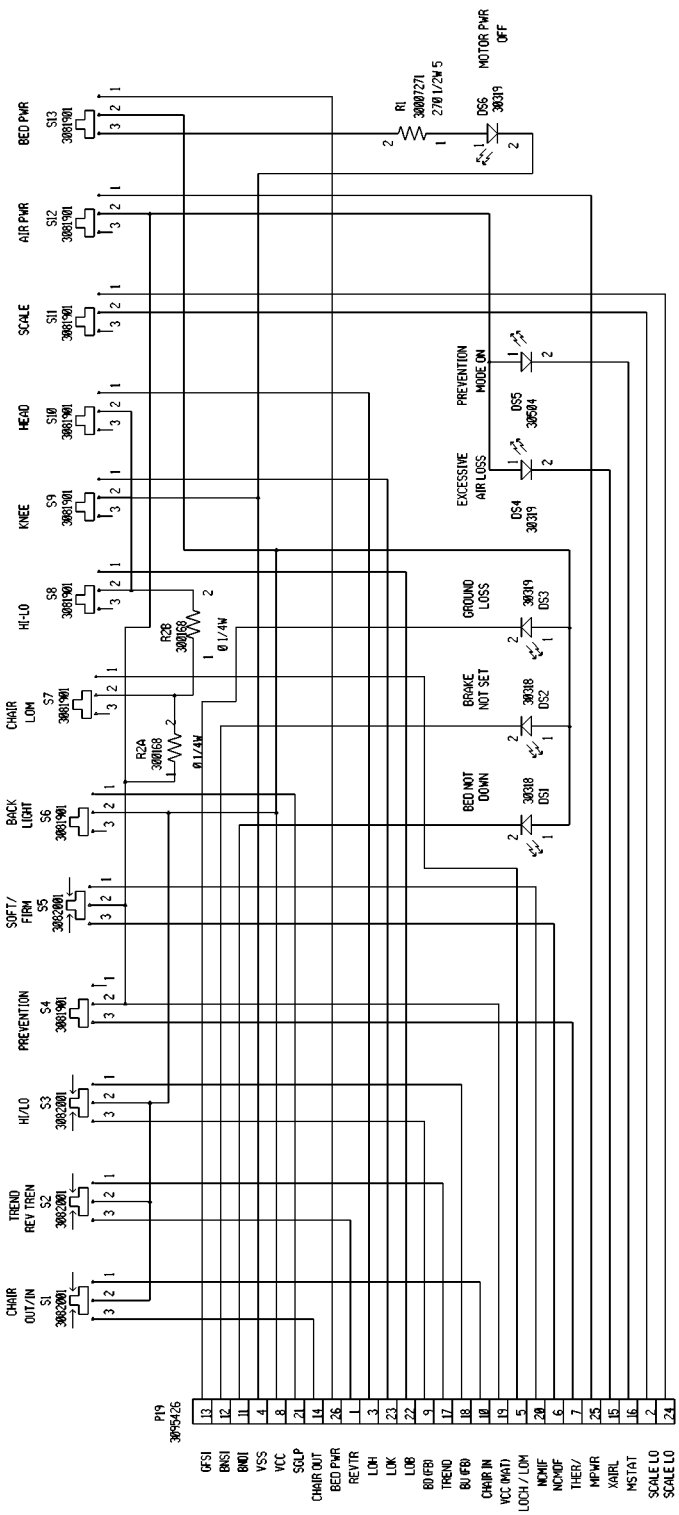

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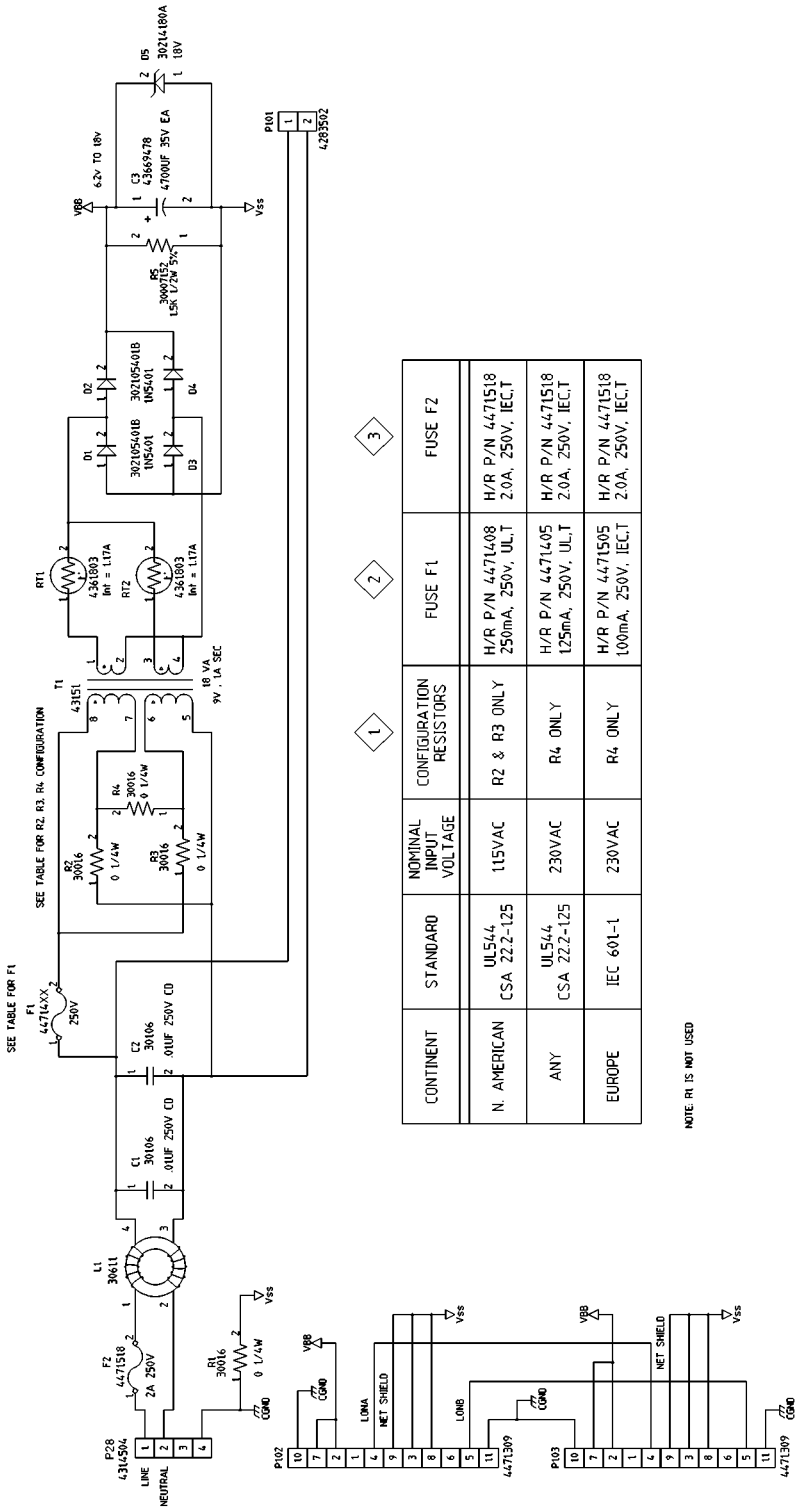
Figure 3-42. ZoneAire Sleep Surface Power Supply Board—P/N 44719-01/02/03



	CONTINENT	STANDARD	NOMINAL INPUT VOLTAGE	CONFIGURATION RESISTORS	FUSE F1	FUSE F2
1	N. AMERICAN	UL544 CSA 222-125	115VAC	R2 & R3 ONLY	H/R P/N 44714108 250mA, 250V, UL,T	H/R P/N 44715181 2.0A, 250V, IEC,T
2	ANY	UL544 CSA 222-125	230VAC	R4 ONLY	H/R P/N 44714105 125mA, 250V, UL,T	H/R P/N 44715181 2.0A, 250V, IEC,T
3	EUROPE	IEC 601-1	230VAC	R4 ONLY	H/R P/N 44715105 100mA, 250V, IEC,T	H/R P/N 44715181 2.0A, 250V, IEC,T

m026d198

Figure 3-43. ZoneAire Sleep Surface LED Board Assembly—P/N 44732

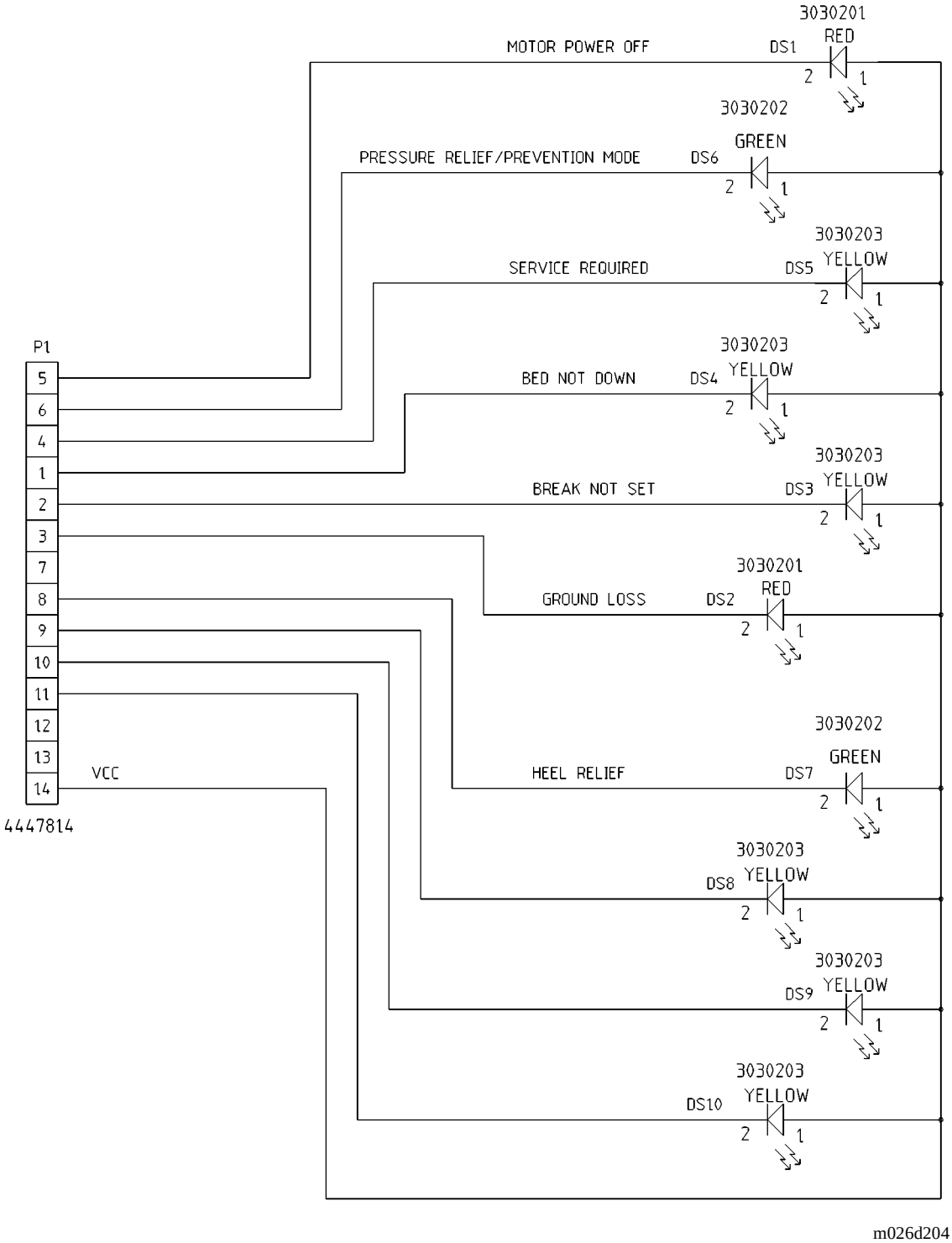


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Figure 3-44. Cable, MF Bednet—P/N 44811

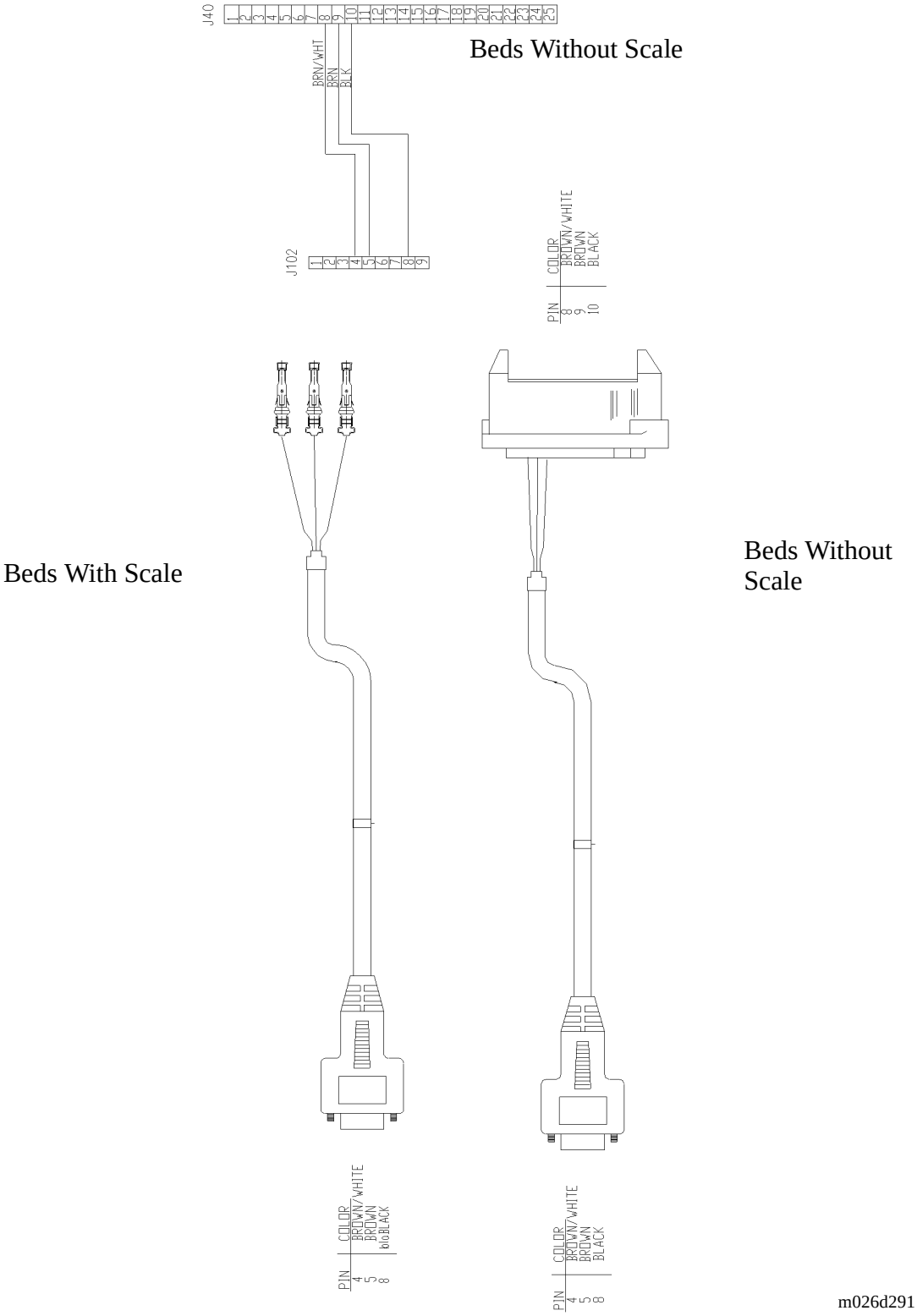

Figure 3-45. Power Cord Assembly—P/N 45618

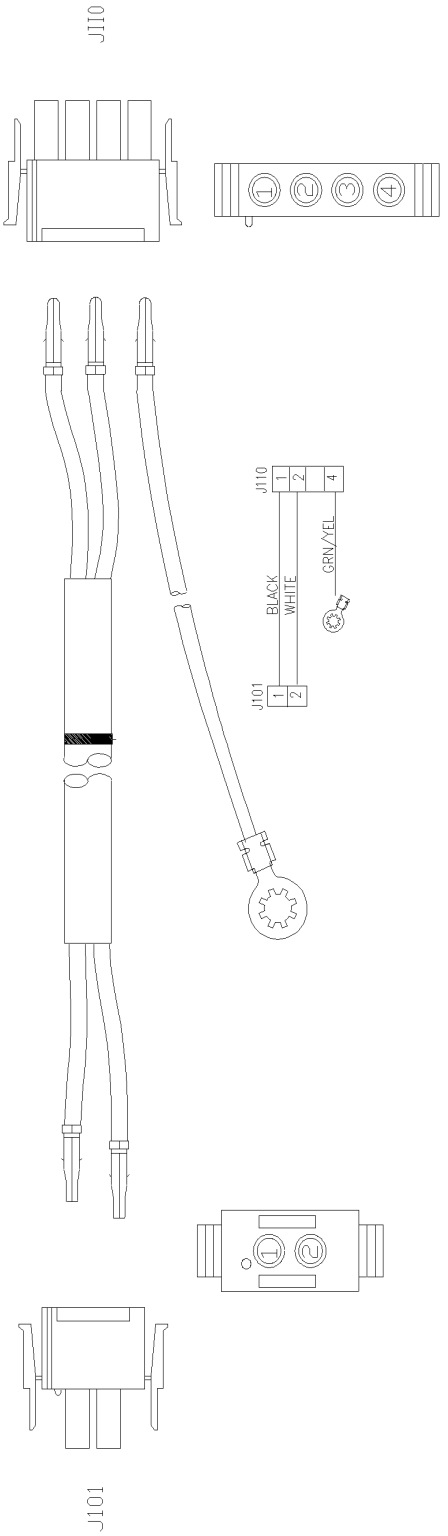

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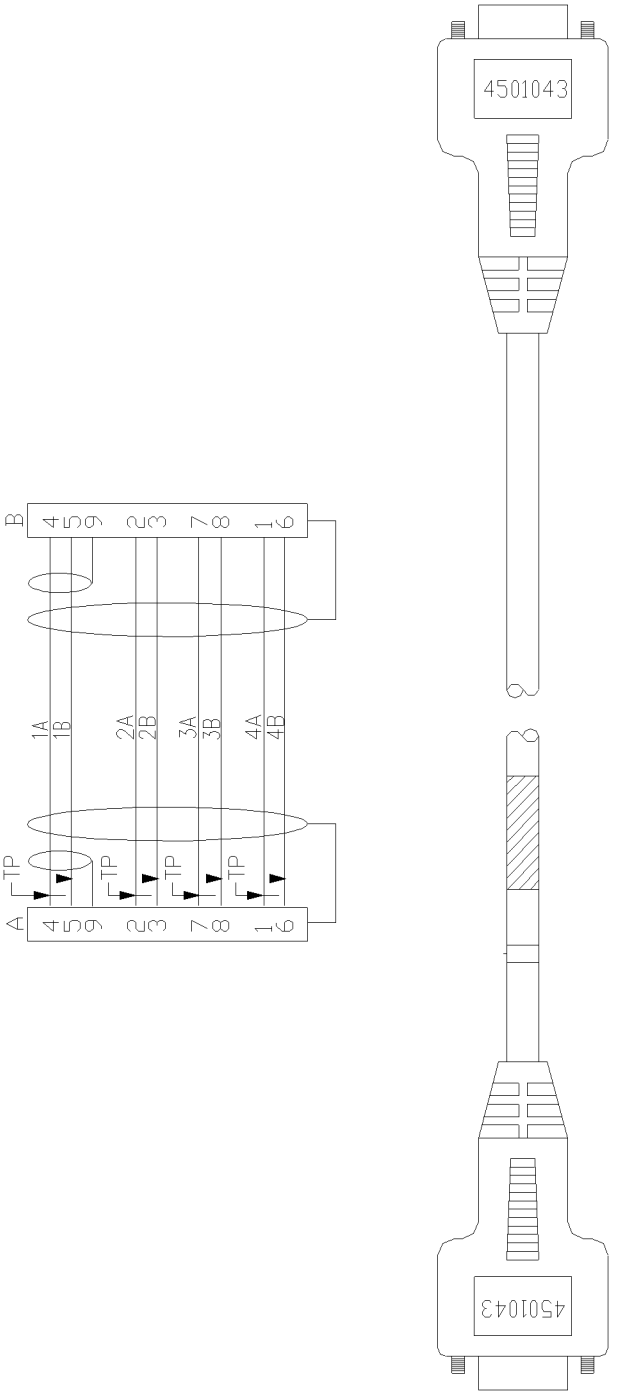
Figure 3-46. LON Cable—P/N 45010-43



m026d293

Figure 3-47. Power Adapter Cable Assembly—P/N 49299

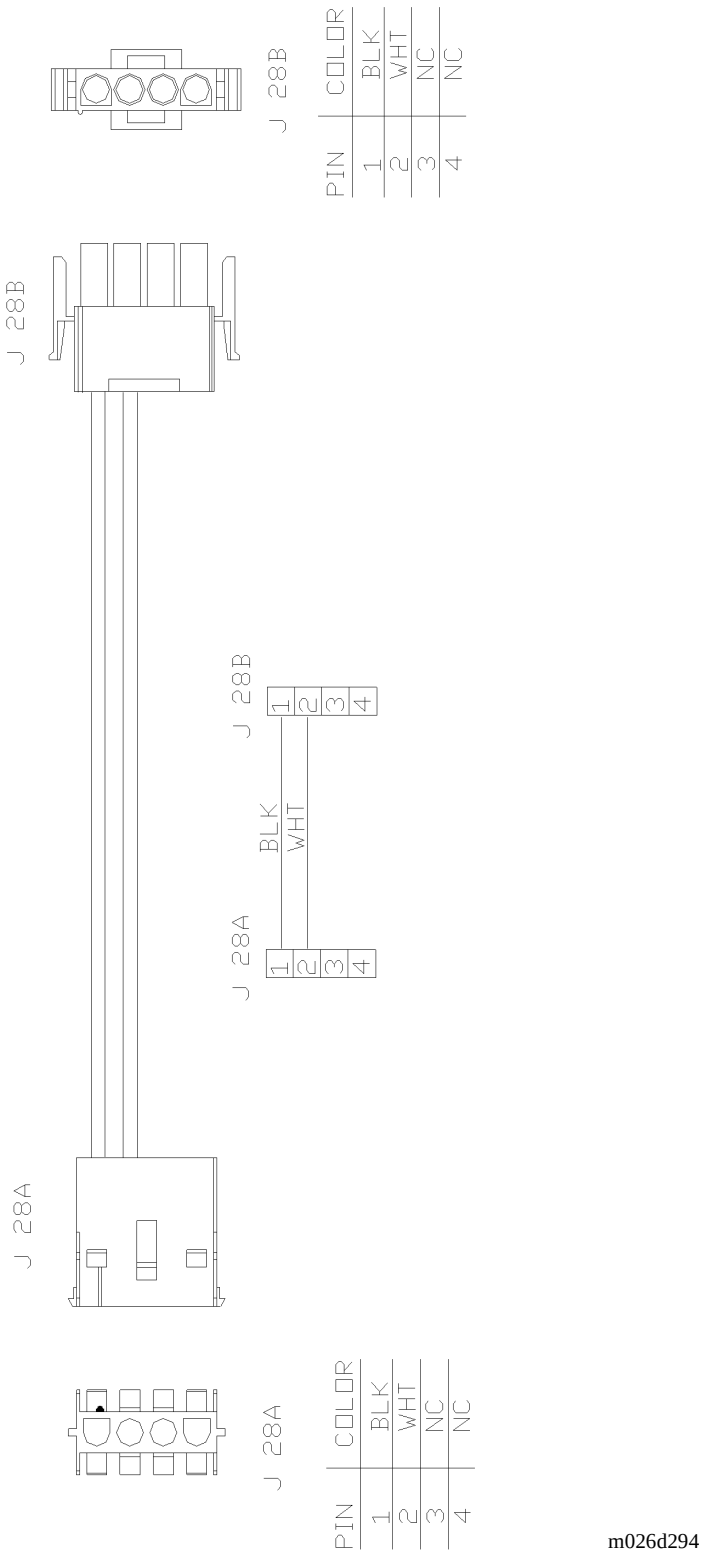
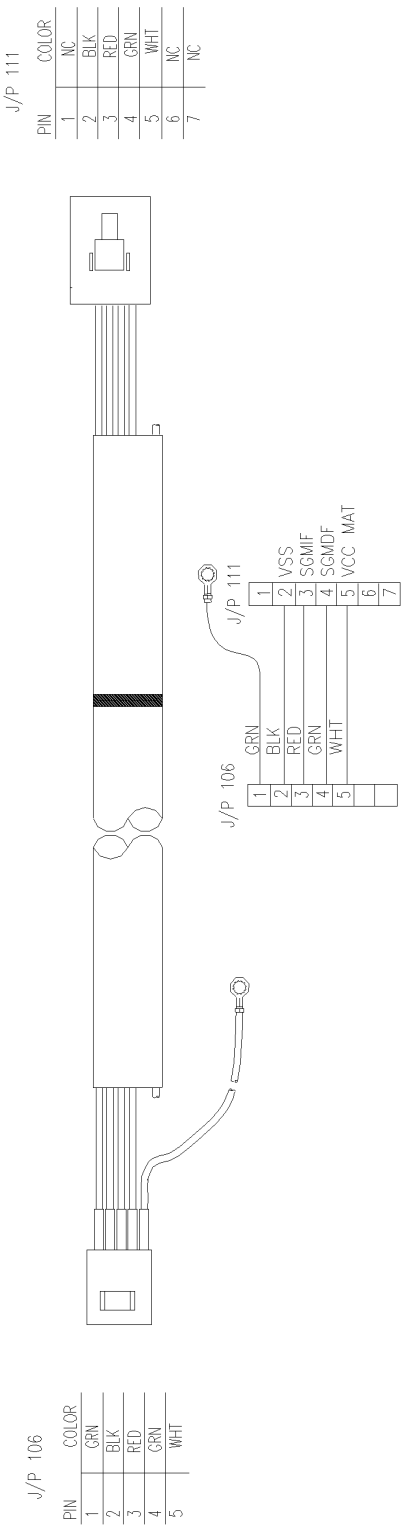


Figure 3-48. Siderail Cable Assembly—P/N 49300



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ZoneAire Sleep Surface Hardware Theory of Operation

Power Supply Board—P/N 44719

The power supply board provides logic power to the ZoneAire Sleep Surface air control board, sensor control board, attendant control console, and other future upgrades. One central supply allows several nodes or logic boards to power up at nearly the same time.

AC input power is applied to connector P28. (Pin 1 is line, pin 2 is neutral, and pin 4 is chassis ground.)

CAUTION:
Fuse F2 (T, 2.0A, 250V, IEC127-3) provides protection for the power supply and the air module.

Use only the correct fuse to prevent equipment damage.

L1, C1, and C2 filter differential line transients.

Connector P101 is the AC power output to the air module. (Maximum output current with fuse F2 is 2Arms.)

Resistor R1 is currently not used in this assembly. It may be used if Vss ever needs to be connected to chassis ground at a central point.

Resistors R2, R3, and R4 are used to configure the primary coils of transformer (T1) for series or parallel connection. R2 and R3 provide parallel connection for a 120V AC input. Only R4 provides series connection for a 230V AC input.

CAUTION:
Fuse F1 protects the transformer primary and is necessary for UL544 approval.

For 120V AC power use a 0.25A, UL198G, or a 0.2A, IEC127-3, time-lag fuse. For 230V AC power use a 0.125A, UL198G, or a 0.1A, IEC127-3 time-lag fuse. Check the assembly drawing or schematic for proper Hill-Rom fuse. Use only the correct fuse to prevent equipment damage.

The transformer full load output (as configured for this supply) is 9V rms at 2A rms.

PTCs, RT1 and RT2, protect the secondaries and the raw supply from overloads. They are also needed for IEC601-1 approval.

Resistor R5 discharges capacitor C3 when input power is removed.

Diode D5 helps clamp line transients to 18V.

Connectors P102 and P103 supply low voltage power and connect the LON net to external nodes. (Pins 2 and 7 are VBB, pins 3 and 8 are Vss, pin 9 is net shield, pin 4 is LONA, and pin 5 is LONB.)

Air Control Board—P/N 44760

Echelon Node

The Echelon node consists of an Echelon microprocessor (U1, MC143150FU, Neuron), 32Kbyte PROM (U2), power up reset circuit (U11), 10 MHz crystal, and an RS485 transceiver (U3). The nodes' I/O pins IO_0 through IO_3 make up a 4 bit bi-directional data bus. IO_4 through IO_6 are used as address lines for the HC138 decoder. The decoder outputs are chip select lines for the HC244A and HC240A buffers (inputs) and for the four HC175 flip-flops (outputs). IO_8 through IO_10 make up the Neurowire bus. These three signals along with other chip select lines are used to transmit/receive data from the sensor/valve module in the mattress. Resistor R111 is used as a termination load for the RS485 bus. If the air control board is not the last node on this bus, this resistor should be removed.

Latches and Buffers

Chip select (enable) lines of the HC244A and HC240A buffers allow their outputs to access the data bus. The buffers are used to read the majority of this board's digital inputs. The chip select (clk) lines of the HC175 flip-flops are used to latch data already on the data bus into the flip-flops. Most of the outputs on this board are controlled from these flip-flops.

Valve/Sensor Module Digital Control Lines

CONN_CHK (P114-13) is an input signal which determines if the user accessible connector (located under the foot section) is connected or not. If the signal is LO, the cable is either disconnected or there is no logic power available on the sensor/valve board. Relay K1 will be opened by the micro so that no significant power is available at the user accessible connector.

The output signals SEN_SEL_A (P114-16), SEN_SEL_B (P114-17), and SEN_SEL_C (P114-18) are used to select one of the six air pressure sensors for which data is to be received.

The EEPROM_CS (P114-15) output enables the EEPROM to access the Neurowire bus.

The A/D_D/A_CS (P114-3) output enables the A/D or the D/A converter to access the Neurowire bus.

The DATAOUT (P114-5), DATAIN (P114-4), and CLK (P114-14) signals make up the Neurowire bus. The CLK signal strobes data to the valve/sensor board on the DATAIN line, and it strobes data from the valve/sensor board on the DATAOUT line.

Again the A/D_D/A_CS and EEPROM_CS chip select lines determine which IC on the valve/sensor board will access the Neurowire bus.

Other Signals

The BDXT (P111-1) signal is not used on the ZoneAire Sleep Surface system.

SGMIF (P111-3) and SGMDF (P111-4) are signals from the siderail inflate and deflate switches. These switches connect Vcc from the bed control board to connector P111 pins 3 and 4. This is the reason Vss bed control (P111-2) is connected to Vss on the ZoneAire Sleep Surface air control board.

The LCD_IN (P111-6), CPR (P111-7), and CPR RELEASE SW/signals (P115-2 and P115-1) are from the bed control board and are not used at this time.

External Watchdog

The circuitry surrounding U10 is an external watchdog timer circuit. In the event that the microprocessor locks up or gets lost, this circuit will clear all the flip-flop outputs, and reset the Neuron. The Neuron’s software must pulse U10-6 at least once every 30 seconds to keep U10-8 from going LO. A falling edge of IO7 generates a 480us positive pulse at U10-6 due to C39 and R15. If IO7 is stuck HI or LO, the DC blocking capacitor C39 allows R15 to pull the input of the schmitt-trigger inverter LO which keeps U10-6 LO. U10 is a programmable timer with a 16 stage counter and internal oscillator. Upon power up the Q output goes HI. If MR master reset is constantly LO, the Q output will oscillate at 30 sec. HI then 30 sec. LO. A HI on MR resets the counter and keeps the Q output HI.

24V AC Solenoid Drivers

The circuitry surrounding U20 - U25 and Q3 - Q8 comprises the solenoid drivers used to open and close the air valves located in the mattress valve/sensor module.

Power for the solenoids comes from the off board 80VA, 24V AC secondary, transformer. Fuse F2 provides primary coil protection and is sized to pass UL544 short and overload tests. Fuse F1 provides secondary protection and is necessary for IEC601-1 short and overload tests. Zero ohm resistors, R80 through R82, are used to configure the transformer's primary coil for either 115V AC or 230V AC operation. Relay K1 acts as a supervisory switch for solenoid power and logic power to the valve/sensor module. The relay is on continuously during normal operation. It is only turned off if the cable is disconnected, if a system failure is detected, or if the air system switch is turned off.

The 4 amp triacs, Q3 - Q8 are driven by the opto-triac drivers U20 through U25. Fuses F3 through F8 provide overcurrent protection for the cable and valve/sensor module.

The circuitry surrounding U18 provides an O-ring feedback function to the microprocessor. This circuit detects whether a triac is conducting. Resistors, R50 through R55 are sized so that only when a triac is conducting will the U18 opto's detector output switch. When a triac is conducting, the output of the opto is a 50 or 60 Hz square wave. This square wave keeps capacitor C27 discharged so that the output of the Schmitt-trigger inverter is HI. When all triacs are in the blocking state, C27 charges up via R66 and R69 which allows the inverter output to go LO.

Compressor and Crossover Valve Drivers

The circuitry surrounding Q9, Q10, U26, and U27 makes up the compressor and cross-over valve drivers. Q9 and Q10 are 800V, 8A, high noise immunity triacs. The circuitry around U19 is another O-ring function similar to the one previously mentioned.

ESD Protection

Some ICs have a 100 ohm resistor in series with its Vcc pin to limit Icc to 50 mA. This helps prevent latch-up. Switched inputs have RC protection for debounce and static. Digital outputs have a 5.0v TVS zener, 1K ohm resistor, and (Harris SP720) diode clamps.

LON Connector (P112, P113)

Pins 2 and 7 provide unregulated logic power to the board from the central power supply.

Pins 3 and 8 are for unregulated logic power return.

Pins 4 and 5 are the Echelon net signal lines.

Pin 9 is the net shield connection.

Regulator

RT1 provides overcurrent protection at currents over 0.5A. U15 regulates to + 5V DC $\pm$ 0.25V. Maximum output current for this application is approximately 385mA. U15 can maintain regulation with an input voltage down to 5.75V DC.

Line Input Power (P110)

P110-1 is line, P110-2 is neutral, and P110-4 is chassis ground.

Sensor Control Board—P/N 44740

General Description

The pressure sensing circuit provides the interface between the Advance Series Bed ZoneAire Sleep Surface multiple air volume and the control circuit.

The pressure sensing circuit consists of six air pressure transducers and a common mode reference voltage input which are multiplexed and amplified sequentially. The DC offsets are corrected by a digital-to-analog (D/A) converter whose output negates the offsets of each transducer and reference amplified signal. An eight bit analog-to-digital (A/D) converter configured for nine bit accuracy converts the amplified signal to a digital form compatible with the serial interface requirements. Included in the circuit is a 64 word EEPROM which stores the required D/A DC offset compensation byte for the reference and each transducer, the A/D converter output corresponding to the reference input, the A/D converter output at zero psi for each transducer, and the A/D converter output at one psi for each transducer. This design allows all circuit gain, offset, and calibration parameters to remain on board thereby allowing characteristic independence from the mating control processor circuit.

Input Protection

Diodes D21-D26, D30 are transient voltage suppressors used to divert input electrostatic discharge (ESD) currents to ground. They have a breakdown voltage between 6.4 and 7 volts. The voltage at the input pins of the schmitt trigger U9 and NAND gate U7 cannot exceed the supply voltage by more than 1.5 volts nor can it drop below the ground potential by 1.5 volts. Therefore, any voltage build-up across the voltage suppressors is clamped by diodes D3-D14, D28, and D29 through current limiting resistors R52, R54, R56, R58, R60, R62, and R64. The inherent hysteresis of U9 provides clean logic levels and sharp transitions to the circuit's logic devices. U7 provides a clean logic level to the select line of multiplexers U1 and U10. Diode D27 is also a transient suppressor with a breakdown voltage between 20 and 24.4 volts.

Output Protection

The output pin 6 of U7 cannot exceed the supply voltage by more than 0.5 volts nor can it drop below the ground potential by 0.5 volts. Therefore, any voltage build-up across voltage suppressor D15 must be clamped within 0.5 volts of the rails. To compensate for the approximately 0.7 volt turn-on voltage of D17, zener diode D16 and resistor R50 create a lower rail voltage of approximately 4.7 volts as a reference for clamping diode D17. Likewise, D19 and R49 create a (Vcc - 4.7) volt reference for clamping diode D18. R51 provides current limiting during transient events yet low line impedance during normal operation.

Capacitor C21 absorbs transient currents while R47 limits any current caused by an ESD event.

EEPROM

Upon reset, the control processor reads the offset compensation constants from EEPROM. To do so, a logic level 0 (low) is applied to P131 pin 15 (EEPROM_CS). This results in a logic level 1 (high) at the chip select U3 pin 1 enabling the EEPROM. A 0 is then applied to P131 pin 4 (DATA_IN) as a start bit of 1 at U3 pin 3. A 0-1-0 clock pulse is then applied to P131 pin 14 (CLK). The low-to-high transition of the inverted pulse at U3 pin 2 causes the start bit to be clocked into the EEPROM as the first bit of the read instruction. The remainder of the read instruction is sent by clocking in seven more bits, 10XXX, where 10 is the opcode for “READ”, and XXXXX is the complement of the address of the word being read. The next 16 clocks at P131 pin 14 clock the 16 bit word out U3 pin 4 on the U3 pin 2 rising edge. The most significant bit (MSB) is clocked out first, the least significant bit (LSB) last.

Resistor R24 acts as a current limiter which protects U3 should a latchup condition occur. C11 provides decoupling.

Digital-to-Analog Converter

NAND gate U7 pin 1 acts as a D/A chip select pin. A logic level 0 at P131 pin 3 (A/D_D/A_CS) enables the CLK signal to the shift register U8. The complement of the MSB of the incoming byte is applied to P131 pin 4 (DATA_IN). A 1-0-1 clock pulse is then applied to P131 pin 14 (CLK). The low-to-high transition of the pulse at U2 pin 8 causes the MSB to be clocked into the shift register. The remainder of the byte is sent by clocking in the complement of the seven remaining bits. After the eight (8) clocks, the MSB is seen at U2 pin 13, and the LSB is seen at pin 3.

R63 is an R/2R resistor network whose output is 256 discrete voltage levels linearly spaced from Vss to approximately 2.90 volts. The voltage at R63 pin 16 is determined by the D/A byte shifted into U2. R46 scales the range of R63 pin 16 to the 2.90 volts described above.

Resistor R20 acts as a current limiter which protects U2 should a latchup condition occur. C12 provides decoupling.

Analog Multiplexer

Analog multiplexer U1 routes the selected reference or pressure transducer output voltage to the amplifier. Resistor R19 acts as a current limiter which protects U1 should a latchup condition occur. C13 provides decoupling.

Amplifier

The amplifier is a two stage differential amplifier circuit with a sum input at the first stage and a difference input at the second stage. U6 has low input offset voltage advantages while U5 has large output voltage swing advantages. R1 and R2 act as voltage dividers that apply approximately 1.93 volts at U6 pin 10. This voltage is passed through the unity gain amplifier to U6 pin 8. The differential voltages from the selected transducer are applied to U6 pin 3 and pin 5. The difference between these two voltages is amplified by a gain of approximately G = 256 and added to the 1.93 volts at U6 pin 8. This guarantees a voltage within the operating range of the amplifier including worst case component voltage tolerances and over the worst case pressure range. The voltage at U6 pin 7 is applied to a difference amplifier with gain of G = 2. The voltage at U5 pin 3 is the output of the D/A converter whose value is that needed to compensate for the DC offsets of the selected sensor and amplifier. This voltage is subtracted from that at U6 pin 7, and the result is amplified by G = 2. The voltage at U5 pin 7 is then applied to the A/D converter U4 pin 3.

Resistor R3 acts as a current limiter which protects U6 should a latchup condition occur. C1 and C3 provide decoupling.

Analog-to-Digital Converter

Analog-to-digital converter U4 can be addressed to operate in a differential mode. This allows it to be configured to operate with higher accuracy. Resistors R17 and R18 divide Vcc in half. This voltage is applied to the unity gain amplifier U6 whose output is applied to U4 pin 4 (CH 1). To select U4, a 1 is applied to P131 pin 3 (A/D_D/A_CS). This 1 is inverted by U9 and applied to U4 pin 2. A 0 is applied to P131 pin 4 (DATA_IN) as a start bit resulting in a 1 at U4 pin 13. A 0-1-0 clock pulse is then applied to P131 pin 14 (CLK).

The low-to-high transition of the inverted pulse at U4 pin 12 causes the start bit to be clocked into the A/D as the first bit of the conversion instruction. The remainder of the conversion instruction is sent by clocking in three (3) more bits, 101, where 101 is the opcode for converting U4 CH 1 with respect to CH 0. The next eight clocks at P131 pin 14 clock the eight bit A/D byte out U4 pin 10 on the U4 pin 12 falling edge. The most significant bit (MSB) is clocked out first, the least significant bit (LSB) last. If the voltage at CH 0 is greater than Vcc/2, a second conversion is required. After clocking in the start bit as described above, three more bits, 111, are clocked in where 111 is the opcode for converting U4 CH 0 with respect to CH 1. The next eight clocks at P131 pin 14 clock out the eight bit A/D byte as described above. C5 provides decoupling.

Solenoid Drive

Connector P131 pins 7 - 12 routes the 24V, 50/60 Hz solenoid drive voltage directly to the solenoid valves through P132 pins 13, 11, 8, 6, 4, 2 respectively. P132 pins 1, 3, 5, 7, 10, 12 route the solenoid drive return to P131 pins 21 - 24 through zero ohm resistor R99.

Grounds

Analog ground (Vss) and digital ground (GND) are tied together through zero (0) ohm resistor R29 to create a star ground configuration. This helps isolate noisy digital return currents from the analog returns.

Capacitor C22 provides a path to chassis ground for chassis referenced transients on the circuit grounds.

Power Supply

Voltage regulator U8 maintains Vcc at 5 $\pm$ 0.25 volts. C6 and C7 maintain regulation stability. D2 provides a bleed off path for C6 during loss of power at P131 pin 1 (VBB2SW). P131 pin 13 (CONN_CHK) returns Vcc to the control processor board as an indication that the electrical connections between the two circuits are made.

Resistors R14, R16 voltage divides the unregulated supply VBB2SW by 0.263 to allow sampling by the A/D. Resistor R66 protects the A/D by current limiting any transients on VBB2SW.

ZoneAire Sleep Surface Air Interface System

Switch Matrix

The ZoneAire Sleep Surface user interface requires ten switches and twelve indicators. When a switch is pressed or released, there will be a minimum 50 - msec debounce. A network output message will be sent via the LON network to the ZoneAire Sleep Surface providing the state of all ten of the system switches. When a network input message is received from the system, the state of the twelve ZoneAire Sleep Surface indicators will be updated to one of four states (off, blink slow, blink fast, on).

Membrane Key Panel Switch Multiplex Circuit

The switches in the membrane key panel are arranged in 4 rows by 8 columns. Address 0 through 7 of the decoder/selector circuit select columns 0 through 7 individually. Switch states are read on the switch input nibble from the “A” outputs of the 74HC244 tri-state buffer, U5. The “A” output is selected when any of the addresses 0 through 7 are selected on the decoder/selector circuit. The 1N4148 diodes provide protection of the selected column when multiple switches in the same row are activated. Half of the 10K resistor RN2 are used as pull-up resistors for the switch input nibble. The 74HC14 Schmitt Triggered Inverter, U6, buffers the input lines to U5.

LEDs

The switch LEDs and the service required LED are strobed by the LED driver chip (U3). The neuron instructs the driver to turn the LEDs on or off via IO_8 and IO_9 (Neurowire).

Membrane Key Panel LED Driver

The Motorola MC14489 LED display driver, U11, provides drive for 22 of the 26 LED’s located on the membrane key panel. LEDs D1 through D11 and LEDs D17 through D2 are driven by the MC14489 in a multiplexed mode. The refresh rate on bank 1 through bank 5 is between 700 and 1900 Hz. The Neuron controls this display driver through the Neurowire Object. Configuration of the MC14489 is set as an eight bit configuration register. The LEDs are arranged into 5 banks in a common cathode configuration. LED states are controlled by a 24-bit display register. The 3.3K brightness resistor R3 sets the LED current to each LED to approximately 10 mA peak.

Mattress Plumbing

The mattress contains three individual bladders segmented into nine separate sections. There is a port on the left side of each bladder that connects the bladders to their corresponding valve located in the foot end of the mattress and possibly to another bladder. This port is only used for inflating and deflating the bladder.

There is also a port on the right side of each bladder that connects the bladders to their pressure sensor located at the foot end of the mattress and possibly to another bladder. This port is only used to sense the air pressure in the bladder.

The pneumatic related components in the system include the compressor (air pump), the flow direction switching valve, and the muffler.

The muffler minimizes noise as air is pumped into and out of the ZoneAire Sleep Surface system. A hose connects the muffler to the flow direction switching valve.

The flow direction switching valve controls the bi-directional airflow in the system. The hoses on the switching valve lead to the mattress, the muffler, and the input and output of the compressor. A 120V AC solenoid changes the valve position. When the flow direction switching valve is deenergized (its normal state), air is pulled in by the compressor directly from the muffler. The air from the compressor then passes back through the valve and out to the mattress. This sequence is repeated whenever air is needed to inflate the mattress.

For system functions that require airflow out of the bladders, the air control board supplies 120V AC to energize the flow direction switching valve. With the compressor on, air is pulled from the mattress, through the compressor, then back through the switching valve and out the muffler.

Airflow through the pump is always in the same direction.

ZoneAire Sleep Surface Software Theory of Operation

Essentially all intelligent communications and control are performed by the controller circuit. This document is intended to describe the operation of the software, internal to the controller circuit, that provides this intelligence. While the concentration is on software, this description should provide a better understanding of operation of the entire system.

Communication between the controller circuit and the footboard control panel is via LON communications protocol through a single pair of wires utilizing RS485 medium standard. Communications between the controller circuit and the pressure sensing circuit is via a 25 pin D-sub cable, utilizing 3-wire synchronous serial bi-directional communications (along with other discrete lines, and AC and DC power).

General Description

The ZoneAire Sleep Surface is an air inflated, multi-functional, automatic and/or user controlled sleep surface used in conjunction with hospital patient beds. The system functions are separated into several modes of operation.

The pressure relief mode is designed to minimize and uniformly distribute interface pressures between a patient and their mattress.

The comfort mode allows users to manually adjust the air pressures to their desired level.

Three heel relief modes further reduce heel-to-mattress interface pressure and can accommodate a wide range of patient heights.

The auto firm mode inflates the mattress to a high pressure to aid in transfer of patients to and from the bed.

The CPR mode inflates the mattress to a high pressure to provide a firm surface should CPR need to be performed on a bed patient.

Software algorithms are included to provide limited self diagnostics to reduce the probability of unknowingly operating in a degraded state and/or reduce durability of components. Software algorithms, which can be activated through the footboard control panel, are also included to aid in troubleshooting.

Reset

A reset can happen two ways. A reset is initiated when power is applied to the NEURON micro controller, and when a Neuron watchdog timer expires.

Upon reset, the following sequence occurs:

- The operating mode is read from the NEURON's internal EEPROM. This is the state the air system was in before the reset occurred.
- Relay is turned on. This supplies power to the pressure sensing circuit located in the mattress. It also supplies 24V AC power to the manifold valve assembly drive circuitry.
- Messages are sent to the footboard control panel to light the appropriate LEDs.
- Any errors present are cleared.
- The sensor calibration constants are read from the EEPROM located on the pressure sensor circuit. These constants are stored in multiple locations. If these multiple locations are not consistent, an error is set.
- The present pressure is read and stored for reference for use in the comfort mode.
- Normal operating sequence is initiated in the appropriate mode.

ZoneAire Sleep Surface Operating Modes

The air system operates in one of the following possible modes:

- Off
- Pressure management (pressure relief)
- Heel management 1 (heel relief 1)
- Heel management 2 (heel relief 2)
- Heel management 3 (heel relief 3)
- Comfort
- Auto firm
- CPR

In all modes, the footboard control panel is monitored for activity pertaining to the air system. In all modes, except the off mode, a main loop is executed at an approximate 25 Hz rate that performs the following functions:

- Executes pressure regulation/control in the appropriate air system mode
- Performs a D/A conversion to calibrate each sensor prior to A/D conversion
- Performs A/D conversion on each pressure sensor
- Monitors electrical connection between the control circuit board and the pressure sensing circuit board
- Monitors CPR switch input
- Monitors the driver circuits for the air pump and each valve for proper output

Some operating modes have a mode memory feature. With this feature, the system can return to the previous operating mode by pressing the present mode's switch (i.e. toggle from the present mode back to the previous mode). For example, suppose a transition is made to the auto firm mode from the comfort mode. By pressing the AUTO FIRM switch, a transition will be made back to the comfort mode and user defined pressure trim points (defined below) are restored. The modes with this mode memory feature are:

- Heel relief_1 mode
- Heel relief_2 mode
- Heel relief_3 mode
- Auto firm mode
- CPR mode (press AUTO FIRM switch to return to previous mode)

Off Mode

While in the off mode:

- The relay is opened.
- Other outputs are cleared.
- Hardware watchdog is refreshed (unless disabled by LON explicit message code 0x01 for testing during manufacture).
- All air system footboard control panel activity is monitored.
- All air system LEDs except mains power are off.
- No pressure regulation is performed.

The transition to the off mode can be initiated two ways:

- Pressing the SLEEP SURFACE POWER switch while in any of the other modes.
- An air system error occurs with exception of a communication error. Can occur while in any of the other modes.

Pressure Relief Mode

While in the pressure relief mode, the air pressures in each of the six bladder zones are regulated at predefined levels, called trim points. Around each of the trim points is a “band” which provides a pressure tolerance and creates a pressure lag. If no correction in pressure is taking place, the band is used as the reference.

Transition to the pressure relief mode can be made by:

- Pressing the SLEEP SURFACE POWER switch while in the off mode.
- Pressing the PRESSURE RELIEF switch while in any other mode except off mode.
- Pressing HEEL RELIEF 1 switch while in the heel relief 1 mode.
- Pressing HEEL RELIEF 2 switch while in the heel relief 2 mode.
- Pressing HEEL RELIEF 3 switch while in the heel relief 3 mode.
- Pressing the AUTO FIRM switch while in the auto firm mode only if the auto firm mode was initiated from the pressure relief mode (mode memory feature).
- Pressing the AUTO FIRM switch while in the CPR mode only if the CPR mode was initiated from the pressure relief mode (mode memory feature).

The following footboard control panel LEDs are lit:

- SLEEP SURFACE POWER LED
- PRESSURE RELIEF LED

Heel Relief Modes

While in a heel relief mode, certain zones are deflated to near zero pressure depending on which heel relief mode is selected. Pressures are then regulated, as described in the pressure relief mode above, at predefined trim points.

Upon entering a heel relief mode, a 10 minute timer is started. When this timer expires, the deflated heel zones are inflated to a higher, reliably readable, pressure then immediately deflated back to the trim points defined above.

Transition to a heel relief mode can be made by:

- Pressing the respective heel relief switch (HEEL RELIEF 1, 2, or 3 switch) while in the pressure relief mode.
- Pressing the respective heel relief switch (HEEL RELIEF 1, 2, or 3 switch) while in either of the other two heel relief modes.

The following footboard control panel LEDs are lit:

- SLEEP SURFACE POWER LED
- PRESSURE RELIEF LED
- HEEL RELIEF 1, 2, or 3 LED

Comfort Mode

While in the comfort mode, the pressures in the six zones can be set manually in two ways:

- With the patient firm, soft controls on either siderail, provided the SLEEP SURFACE LOCKOUT is not active.
- With the footboard control panel FIRMER, SOFTER switches

When inflating manually, all six air manifold valves are opened, effectively tying all zones together as one air volume, the air pump is turned on, and the flow direction valve is off (flow is into mattress).

When deflating manually, all six air manifold valves are opened, effectively tying all zones together as one air volume, the air pump is turned on, and the flow direction valve is on (flow is out of mattress).

A manifold valve excessive use algorithm is incorporated to prevent unreasonable stress on the pump and valve components due to extensive user activation in the comfort mode. While in this mode, a “duty cycle” counter is used to determine excessive use. Whenever the mattress manifold valves are activated by the user, whether from the footboard control panel or the patient siderail controls, this counter is incremented. Whenever the valves are not activated by the user, the counter is decremented (limited at zero). The counter is also decremented during normal pressure regulation and while the valves are off due to the user exceeding the maximum and minimum limits as described

above. If this counter ever accumulates to more than approximately 10 minutes, manual activation is disabled for approximately 10 minutes.

Transition to the comfort mode can be made by:

- Pressing the COMFORT switch while in any other mode except the off mode.
- Pressing the AUTO FIRM switch while in the auto firm mode provided the auto firm mode was initiated from the comfort mode (mode memory feature).
- Pressing the AUTO FIRM switch while in the CPR mode provided the CPR mode was initiated from the comfort mode (mode memory feature).

While in the comfort mode, the following footboard control panel LEDs are lit:

- SLEEP SURFACE POWER LED
- COMFORT LED
- FIRMER LED (only when inflating using footboard control panel)
- SOFTER LED (only when deflating using footboard control panel)

Auto Firm Mode

While in the auto firm mode, all trim points are changed to new values. Pressures are then regulated, as described in the pressure relief mode, at the new trim points. When entering this mode, a 60 minute timer is started. If this timer expires before the system is placed in a different mode, the system will automatically return to the previous mode.

Transition to the auto firm mode can be made by pressing the AUTO FIRM switch while in any other mode except the off mode.

The following footboard control panel LEDs are lit:

- SLEEP SURFACE POWER LED
- LED

CPR Mode

While in the CPR mode, all trim points are increased to new values as in the auto firm mode. However, the head and seat zones are inflated to these new values first. When these zone pressures reach their trim points, the knee and all three heel zones are inflated to their trim points. Pressures are then regulated, as described in the pressure relief mode, at the new trim points. When entering this mode, a 60 minute timer is started. If this timer expires before the system is placed in a different mode, the system will automatically return to the previous mode.

Initiate the transition to the CPR mode by pulling a CPR lever while in any mode except the off mode.

The following footboard control panel LEDs are lit:

- SLEEP SURFACE POWER LED
- LED

Mode Transition

Power Up

By design, the system always powers up in the pressure relief mode. This is accomplished by pressing the footboard control panel SLEEP SURFACE POWER switch while in the off mode.

During transition from the off mode to the pressure relief mode, the following occurs:

- The low voltage AC/mattress power relay is activated, and all I/O is initialized.
- Any and all errors are cleared.
- All timers and counters are initialized.
- Proper footboard control panel LEDs are lit.
- New mode (pressure relief mode) is stored in the on-chip EEPROM.
- Calibrations are read from the pressure sensing circuit EEPROM, and pressure trim points are calculated.
- Pressure out-of-range delay timers are defeated to allow immediate correction.
- Pressure tolerance bands around the trim points are calculated.

Intermode Transitions

Intermode transitions are transitions between all modes except the off mode. Upon transition into one of these new modes, the following occurs:

- Pressure bands around the new mode's trim points are calculated.
- Pressure out-of-range delay timers are defeated to allow immediate correction to the new trim points.
- Appropriate timers and counters are initialized.
- Proper footboard control panel LEDs are lit.
- New mode is stored in the on-chip EEPROM.

Power Down

A transition to the off mode, either manually or because of a system error, initiates a power down. Upon power down, the following occurs:

- All outputs, including the relay, are disabled.
- The new mode (off mode) is stored in on-chip EEPROM.
- All air system related footboard control panel LEDs are turned off. If the transition to the off mode is due to a system error, the footboard control panel SERVICE REQUIRED LED will flash a code.

Sleep Surface Lockout

The sleep surface lockout function enables/disables patient control of the zone pressure trim points while in the comfort mode. The stage of the lockout is retained through resets and while operating in all modes (this includes the off mode). When this function is active:

- The SLEEP SURFACE LOCKOUT LED is lit.
- Patient control of trim points is disabled (footboard control panel control is allowed).

When this function is inactive:

- The SLEEP SURFACE LOCKOUT LED is off.
- Patient control of trim points is enabled.

System Errors

The controller has built in self diagnostics that are designed to detect system failures that may not be easily identifiable otherwise. These failures will cause the system to transfer to the off mode and repeatedly flash a code on the footboard control panel SERVICE REQUIRED LED.

For the ZoneAire Sleep Surface, the code consists of a certain number, N, of short flashes which identifies which error has occurred on the system. The code is continually repeated with a long pause separating repeats (see table 2-2 on page 2-16).

Slow Leak Error

In all modes, except the off mode, the system is periodically (every 5 minutes) checked for slow air leaks. A slow leak is defined as a leak that is small enough for the pump to inflate to the proper pressure but large enough to cause the system to correct too often.

To detect small leaks, a counter is incremented whenever an inflate sequence occurs and is cleared whenever a deflate sequence occurs. This counter represents the number of inflates without a deflate. An exception to this is manual inflates while in the comfort mode. Manual inflates do not increment the counter, manual deflates clear the counter.

When the 5 minute timer expires, the number of inflates without a deflate is checked for being greater than 20. If this number is greater than 20, a slow leak error is flagged, the operating mode transitions to off, and the footboard control panel SERVICE REQUIRED LED repeatedly flashes code 1. If it is less than or equal to 20, the counter is cleared, and the 5 minute timer is restarted.

The ability to detect a slow leak error is much greater in the auto firm mode where the pressures are much higher and therefore, leak more. Should one need to troubleshoot a system with this error, they should do so while in the auto firm mode.

Continuous Run Error

In all modes, except the off mode, the system is monitored for failure conditions that would cause the pump to be commanded, by the control algorithm, to run continuously. Examples of these are:

- Excessive air leaks
- Faulty pump
- Faulty air manifold or flow direction valve
- Faulty pressure sensor or sensor circuit
- Faulty control circuit
- Loss of AC power or blown fuse
- Open or pinched hose
- Mattress connector not seated properly

If the pump runs continuously for approximately 10 minutes, in either an inflate or deflate sequence, a continuous run error is flagged, the operating mode transitions to off, and the footboard control panel SERVICE REQUIRED LED repeatedly flashes code 2.

Triac Short Error

In all modes, except the off mode, the system is repeatedly checked for a control circuit failure that would cause an air manifold valve, the flow direction valve, or the pump to be wrongly activated.

Whenever the system is not correcting pressures, the feedbacks from the triac drive circuits are monitored. If any feedback indicates an activated drive circuit continuously for 5 seconds, a triac short error is flagged, the operating mode transitions to off, and the footboard control panel SERVICE REQUIRED LED repeatedly flashes code 3.

EEPROM Error

Upon reset and during power up (transition from the off mode to pressure relief mode), the calibrations read from the pressure sensing circuit EEPROM are checked for validity. Each calibration constant is stored in four locations to aid in determining if there is an error. The circuit will also detect faulty readings due to shorted or open communications lines between the control circuit and the pressure sensing circuit.

Whenever an EEPROM error is detected, the operating mode transitions to off, and the footboard control panel SERVICE REQUIRED LED repeatedly flashes code 4.

Mattress Connection Error

In all modes, except the off mode, the electrical connection between the control circuit and the pressure sensing circuit is monitored. Also, prior to reading the calibrations from EEPROM (at reset and power up), the connection is checked. The control circuit checks this connection by sampling the pressure sensing circuit voltage feedback routed through the mattress cable.

The mattress connection error is set by any of two situations:

- Feedback indicates disconnection continuously for 100 samples (approximately 5 seconds).
- Prior to reading EEPROM, the feedback indicates a disconnection.

Whenever a mattress connection error is detected, the operating mode transitions to off, and the footboard control panel SERVICE REQUIRED LED repeatedly flashes code 5.

Triac Open Error

In all modes, except the off mode, the system is repeatedly checked for control circuit failure that would prevent an air manifold valve, the flow direction valve, or the pump to be activated when commanded to activate.

Whenever the system is correcting pressures, the feedbacks from the triac drive circuits are monitored. If any feedback indicates that a drive circuit is not activated continuously for 5 seconds, a triac open error is flagged, the operating mode transitions to off, and the footboard control panel SERVICE REQUIRED LED repeatedly flashes code 6.

LON Communication Error

In all modes, except the off mode, communications with the footboard control panel is checked. The Advance Series Bed ZoneAire Sleep Surface system gets updates, via LON communications, from the footboard control panel at most every 30 seconds. The system refreshes a 5 minute timer whenever it gets this update. Should this timer ever expire, a LON communication error is flagged and the operating mode transitions to off. A message is sent to the footboard control panel to flash the SERVICE REQUIRED LED for code 2, 7. Of course, chances are that the footboard control panel will **not** get this message.

However, the footboard control panel is also checking communications and should discover that communication was lost. It will then flash code 2, 7.

Diagnostic Routines

Component Manual Activation

While in the off mode, operation of the relay, air manifold valves, flow direction valve, and pump can be tested. The test consists of simultaneously pressing the SLEEP SURFACE LOCKOUT switch and the appropriate air system component switches, then verifying operation either visually, audibly, or with the appropriate test equipment. The switch LED corresponding to the component activated will flash at 2 Hz. As long as the SLEEP SURFACE LOCKOUT switch remains pressed, the pump or valve will remain activated so that additional components can be activated as well.

The relay and pump will activate whenever the SLEEP SURFACE LOCKOUT switch is pressed regardless of whether another switch is pressed. The corresponding air system component switches are:

- Head manifold valve—PRESSURE RELIEF switch
- Seat manifold valve—HEEL RELIEF 1 switch
- Knee manifold valve—HEEL RELIEF 2 switch
- Heel top manifold valve—HEEL RELIEF 3 switch
- Heel middle manifold valve—COMFORT switch
- Heel bottom manifold valve—FIRMER switch
- Pump—SOFTER switch
- Flow direction valve—AUTO FIRM switch

Driver Circuit Self Test

While in the off mode, operation of the drive circuitry for the air manifold valves, flow direction valve, and pump can be tested. This tests only for power being switched to each valve/pump component (such as fuse blown, etc.). It does not test for current flow through any valve/pump components.

The test is initiated by simultaneously pressing and holding, for 5 seconds, the PRESSURE RELIEF and AUTO FIRM switches. While the test is being performed, the SLEEP SURFACE POWER LED flashes and the footboard control panel LED associated with that component (see below) flashes. When the test is complete, the footboard control panel LEDs associated with each drive circuit will either light steady or flash. Circuits that pass will light their respective LED **steady** for 5 seconds. The circuits that fail will **flash** their respective LED for 5 seconds. The drive circuits' respective LEDs are:

- Head manifold valve drive circuit—PRESSURE RELIEF LED
- Seat manifold valve drive circuit—HEEL RELIEF 1 LED
- Knee manifold valve drive circuit—HEEL RELIEF 2 LED
- Heel top manifold valve drive circuit—HEEL RELIEF 3 LED
- Heel middle manifold valve drive circuit—COMFORT LED
- Heel bottom manifold valve drive circuit—FIRMER LED
- Pump drive circuit—SOFTER LED
- Flow direction valve drive circuit—AUTO FIRM LED

Control Board—Theory of Operation

The motor control board theory of operation is a description of the master control board assembly, which drives limit switches, siderail, attendant console, and the Trendelenburg function.

The mattress control board theory of operation is a description of circuit controls for the pressure in both upper and lower bladders.

This information will help you understand the control boards, and act as an aid in troubleshooting problems encountered with electrical functions.

Limit Switches

Two types of limit switches may be encountered. One type is a miniature electromechanical “snap action” switch, the other type is a electromagnetic sensor switch (which is a production replacement for the electromechanical type switch). Both types determine the drive screw end-of-travel limit set points, contour up, and contour down.

Two different logic control boards supply power to the two different types of limit switches. Their major difference is in their hilow protect circuit, scale interconnect circuit, and the connector interface system.

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Chapter 4
Removal, Replacement, and Adjustment Procedures

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4

NOTES:

4.1 Head Section

Tools required: None

Resetting

If you raise and lower the head section while holding the CPR release in the activated position, the head section may not operate until you reset it.

1. If a patient is not in the bed, manually lift the head section to its high position until a click is heard. Release the head section. Go to step 3.

2. If a patient is in the bed, use the Hill-Rom P2217 IV rod to manually crank the head screw assembly as follows:

WARNING:
Unplug the bed from its power source before inserting the IV rod for manual operation. Unexpected resumption of power can cause the IV rod to rotate and cause injury.

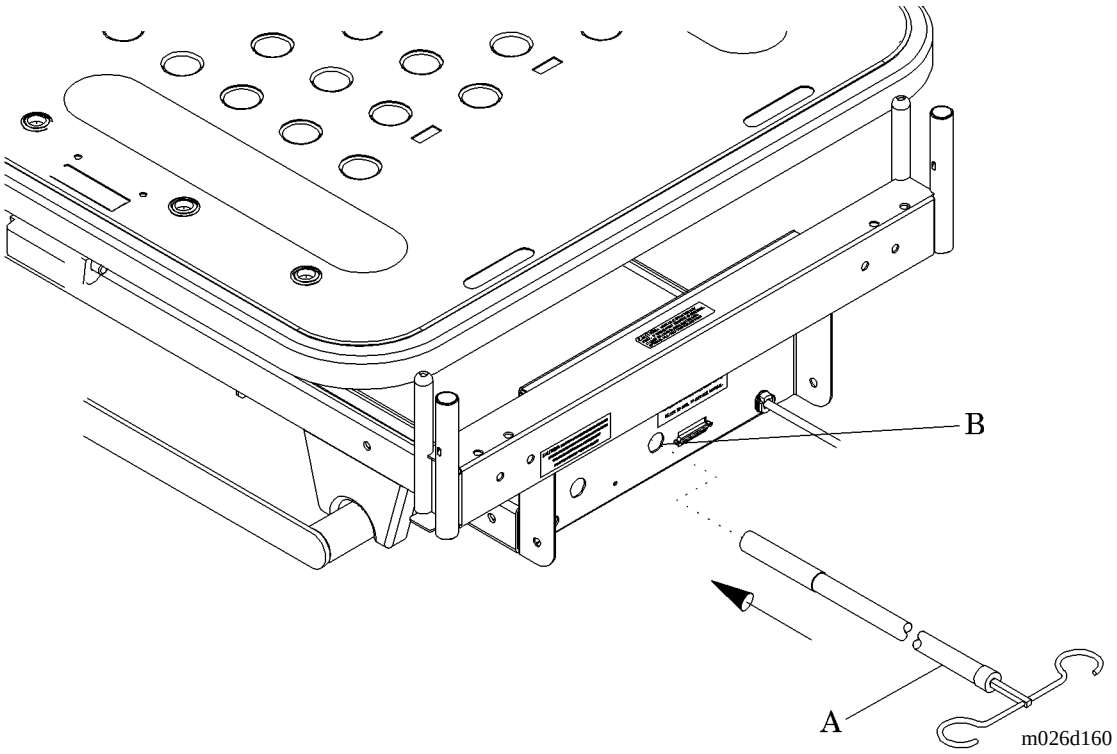
   a. Unplug the bed from its power source.

   b. Insert the IV rod (A) into the access hole (B) at the head end of bed (see figure 4-1 on page 4-10) until it engages the roll pin in the end of the screw assembly.

   c. Push the IV rod enough to push the ejection spring back from the roll pin, allowing the IV rod to engage.

   d. Turn the IV rod clockwise until the screw assembly reaches its mechanical stop.

Figure 4-1. Head Screw Assembly Access with IV Rod



4

NOTE:
The head section will not raise when using the IV rod.

WARNING:
Remove the IV rod before plugging the bed into an appropriate power source. Resumption of power can cause the IV rod to rotate and cause injury.

e. Remove the IV rod from the head screw assembly.

3. Plug the bed into its appropriate power source.

4. Depress and hold the CPR button while the motor is running. Release the CPR button when the motor stops. The bed is now operational.

4.2 Footboard Control Panel

Tools required: None

Removal

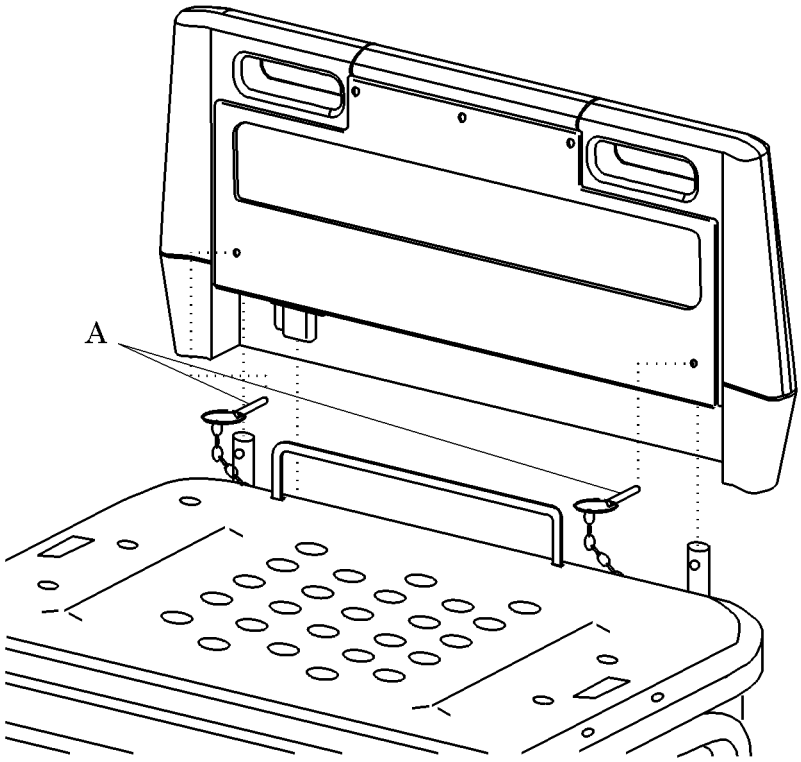
CAUTION:
Do not switch the footboard control panels between the 3-motor and 4-motor Advance Series Beds. Equipment damage can occur.

CAUTION:
Do not remove the footboard control panel for normal cleaning. If fluid is spilled in the footboard control panel area, unplug the bed from its power source. Thoroughly dry the electrical connections for the footboard control panel before plugging the bed into its power source. Equipment damage can occur.

CAUTION:
Unplug the bed from its power source before removing or installing the footboard control panel. Damage can occur to the electronics in the footboard control panel during removal or installation if the bed is plugged into its power source.

1. Unplug the bed from its power source.
2. Remove the two footboard control panel mounting pins (A) (see figure 4-2 on page 4-12).

Figure 4-2. Footboard Control Panel Removal/Installation



3. Lift the footboard control panel slowly off the mounting posts.

Replacement

1. Install the replacement footboard control panel on the mounting posts.
2. Secure the footboard control panel with the two footboard control panel mounting pins (A).
3. Plug the bed into an appropriate power source.
4. Check the functions in the nurse control panel to ensure proper operation of the footboard control panel.

NOTE:
The mattress air system pump will run momentarily when the bed is plugged into an appropriate power source.

4.3 Cover—Foot End

Tools required: T25 torx head screwdriver
Phillips head screwdriver

Removal

1. Raise the knee section to its high point.

SHOCK HAZARD:

Unplug the bed from its power source. Failure to do so could result in personal injury or equipment damage.

2. Unplug the bed from its power source.

3. Remove the footboard control panel (refer to procedure 4.2).

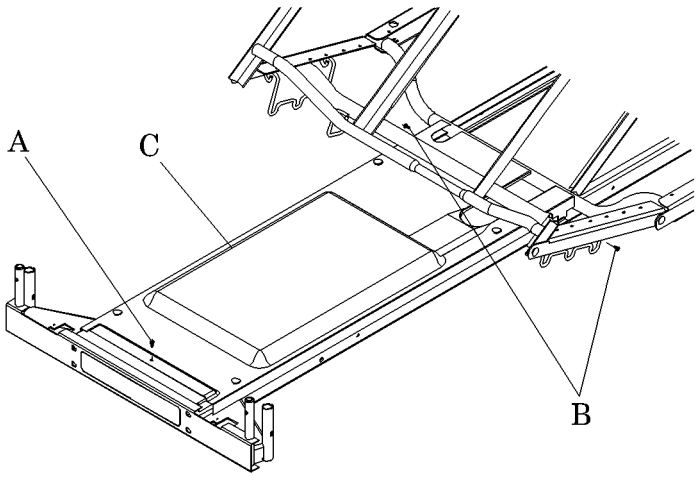
4. Fold the foot section of the bed up and back toward the head end of the bed.

WARNING:
Tie the foot section back toward the head section when preparing to remove the foot end cover. Failure to tie the foot section back can allow the foot section to fall, causing personal injury or equipment damage.

5. Tie the foot section so it cannot fall.

6. Remove one screw (A) and two screws (B) that hold the cover (C) (see figure 4-3 on page 4-13).

Figure 4-3. Foot End Cover



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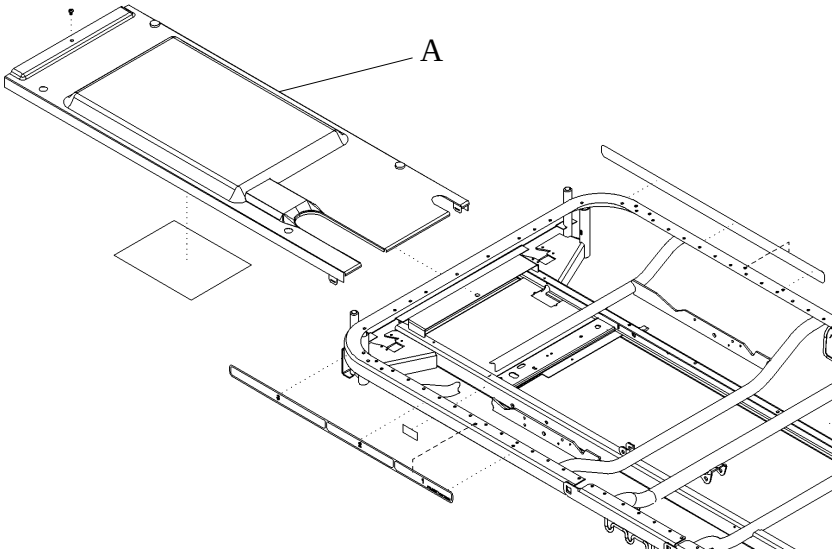
7. Lift the cover (C) up at a point near the foot end of the bed, and pull it out.

Replacement

CAUTION:
Do not lower the foot section from the folded up position with the knee section down and the foot end cover removed. Severe damage to the bed can occur.

1. Place the cover (A) in position on the frame (see figure 4-4 on page 4-14).

Figure 4-4. Foot End Cover Installation



2. Install one screw (A) and two screws (B) that secure the cover (see figure 4-3 on page 4-13).

3. Untie the foot section. Fold the foot section down and forward toward the foot end of the bed.

CAUTION:
Do not attach the footboard control panel to the bed if the bed is plugged into its power source. Damage can occur to the electronics in the footboard control panel.

4. Install the footboard control panel. See “Footboard Control Panel” on page 4-11.

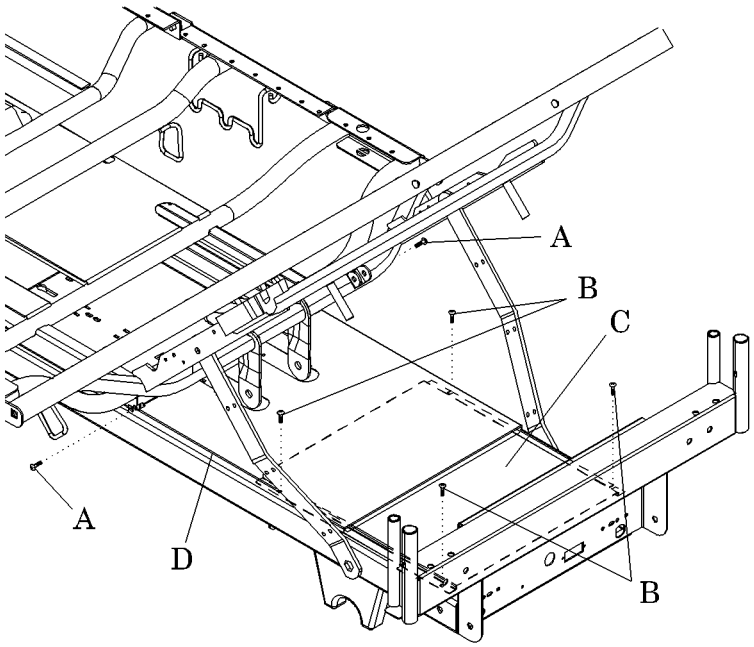
4.4 Covers—Head End

Tools required: T25 torx head screwdriver

Removal

There are two covers at the head end of the bed, stationary (C) and sliding (D) (see figure 4-5 on page 4-15). Both covers must be removed in order to gain access to the motors and drives at the head end of the bed.

Figure 4-5. Head End Covers



1. Raise the head section to the high position using the head up function.

SHOCK HAZARD:

Unplug the bed from its power source. Failure to do so could result in personal injury or equipment damage.

2. Unplug the bed from its power source.
3. Remove the two screws (A) from the sliding head cover (D).
4. Lift the sliding head cover (D) off of the bed.

5. Remove the four screws (B) from the stationary head cover (C).
6. Lift the stationary head cover (C) from the bed.

Replacement

Assemble in reverse order.

4.5 Cover—Seat Section

Tools required: T25 torx head screwdriver

Removal

1. Remove the mattress from the sleep surface, see "DynamicAire Sleep Surface Mattress" on page 4-19 or "ZoneAire Sleep Surface Mattress" on page 4-33 for detailed procedures.
2. Raise the bed to the high position using the hilow function.
3. Unplug the bed from its power source.

SHOCK HAZARD:

Unplug the bed from its power source when service procedures require accessing electrical components. Failure to do so could result in personal injury or equipment damage.

4. If the seat section (D) portion of the bed uses only two screws (C) as shown in figure 4-6 on page 4-17, or figure 4-7 on page 4-18:
   a. Loosen the two screws (C) on top of the seat section (D) portion of the sleep surface.

Figure 4-6. Removing/Installing the Cover Over the DynamicAire Sleep Surface Compressor

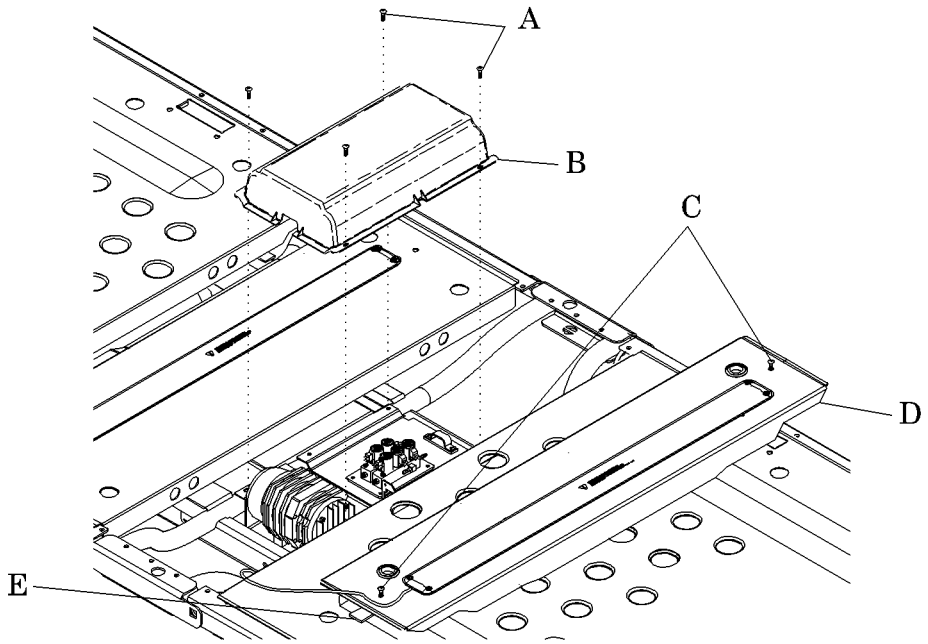
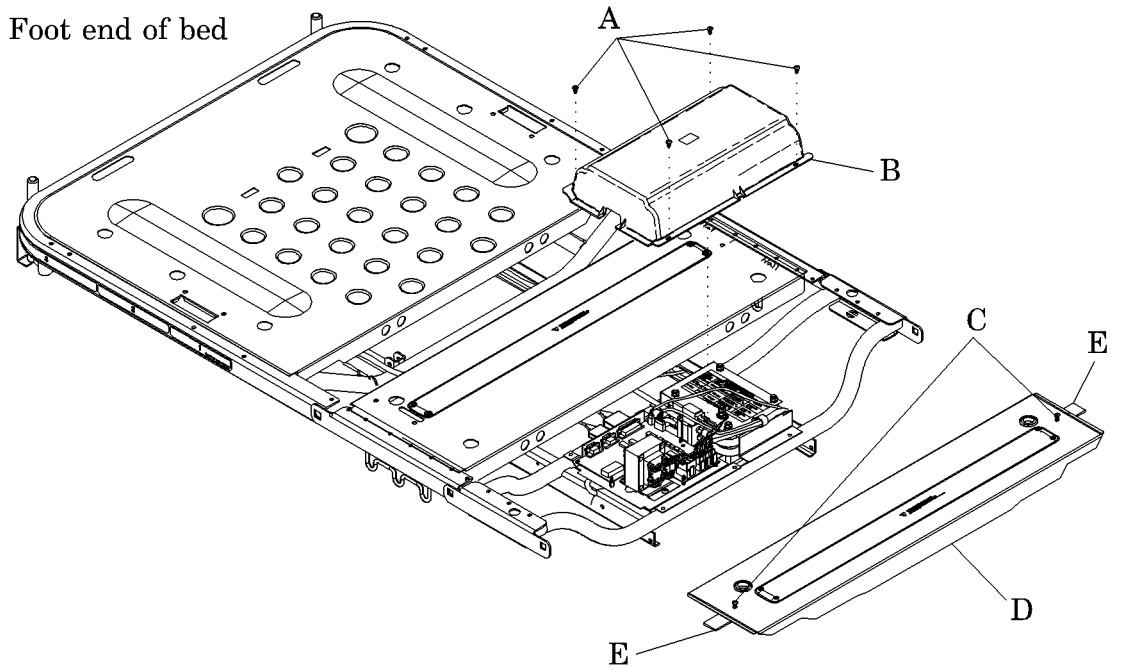


Figure 4-7. Removing/Installing the Cover Over the ZoneAire Sleep Surface Air Supply Module—Old Style Shown



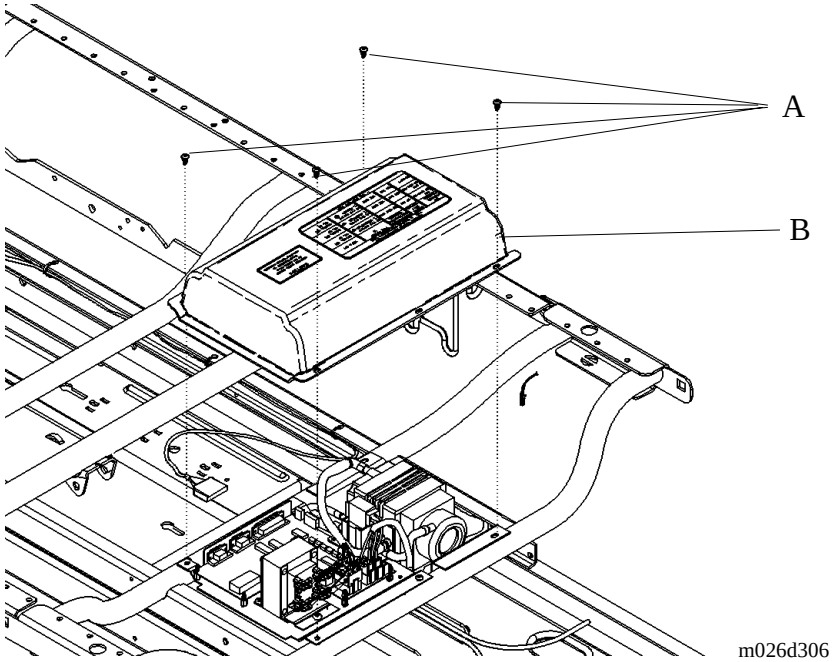
b. Reach under the seat section (D), and rotate the two locks (E) securing the seat section to the sleep surface.

5. If the bed has four screws securing the seat section (D), remove these screws.

CAUTION:
If your bed is equipped with the bed exit system, do not pull on the bed exit tape switches. Damage can occur to the bed exit tape switches.

6. Place the seat section (D) on either the head or foot sleep surface.

Figure 4-8. Removing/Installing the Cover Over the ZoneAire Sleep Surface Air Supply Module—New Style Shown



7. Remove the four screws (A) securing the cover (B) to the bed (see figure 4-6 on page 4-17, figure 4-7 on page 4-18, or figure 4-8 on page 4-19).

8. Remove the cover (B).

Replacement

Assemble in reverse order.

4.6 DynamicAire Sleep Surface Mattress

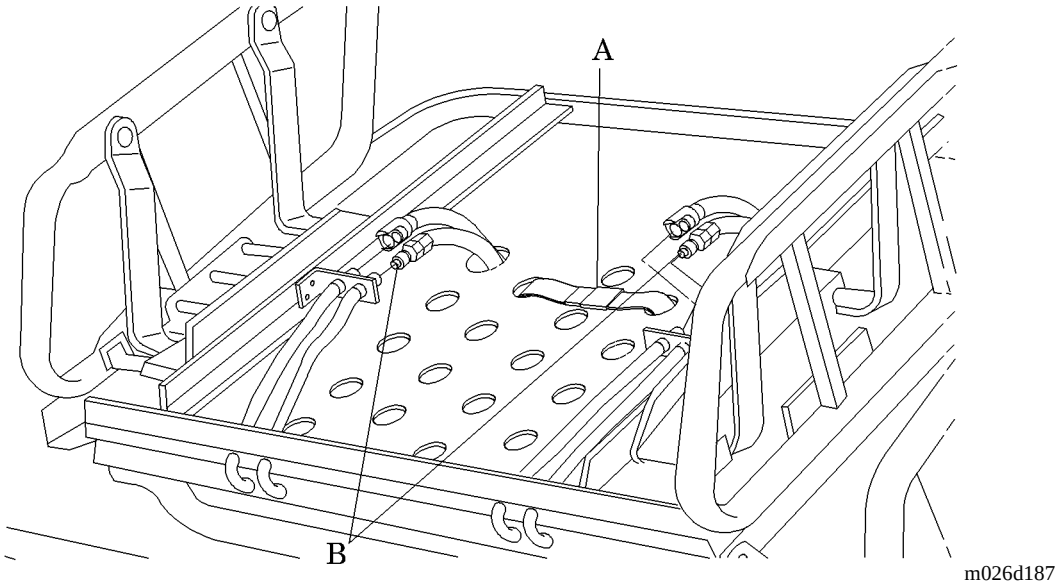
Tools required: None

Removal

1. Lift the foot section to access the air hose couplings.

2. Depress the spring loaded coupling release to disconnect the four mattress air hoses (B) from the bed (see figure 4-9 on page 4-20).

Figure 4-9. Mattress Couplings and Plastic Buckle for DynamicAire Sleep Surface Mattress



3. Disconnect the plastic buckle (B) holding the mattress in place.

4. Remove the air mattress from the bed.

Replacement

1. Install the air mattress using care to insert the two sets of air hoses (B) through the large holes in the foot section.

2. Connect the plastic buckle (A) to hold the mattress in place.

3. Connect the air hoses by pushing the mattress couplings onto the mating bed couplings.

4.7 DynamicAire Sleep Surface P.C. Board

Tools required: T25 torx head screwdriver
Phillips head screwdriver

Removal

1. Raise the bed to the high position using the hilow function.

SHOCK HAZARD:

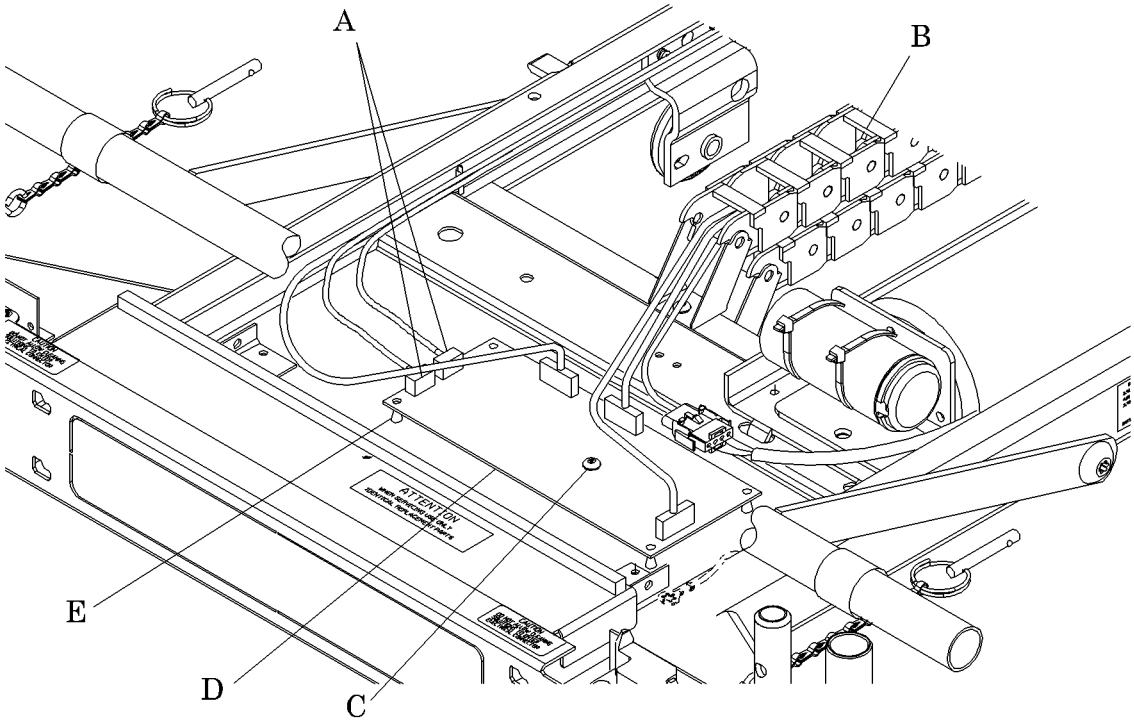
Unplug the bed from its power source. Failure to do so could result in personal injury or equipment damage.

2. Unplug the bed from its power source.

3. Remove the foot end cover. See “Cover—Foot End” on page 4-13..

4. Remove the connectors from the DynamicAire Sleep Surface P.C. board (D) (see figure 4-10 on page 4-21).

Figure 4-10. DynamicAire Sleep Surface P.C. Board Location



CAUTION:
Do not cut or score into the male fittings when removing the air hose from the DynamicAire Sleep Surface P.C. board. Cutting down into the fittings can cause damage and excessive airloss.

5. Remove the air hose from the male fittings (A).

6. Remove the screw (C).

7. Compress the standoffs (E), and remove the DynamicAire Sleep Surface P.C. board (D) from the bed.

Replacement

Assemble in reverse order.

4.8 DynamicAire Sleep Surface Compressor—Old Style

Tools required: T25 torx head screwdriver
Needle nose pliers
11/32" nut driver or open end wrench

Removal

1. Raise the bed to the high position using the hilow function.

SHOCK HAZARD:

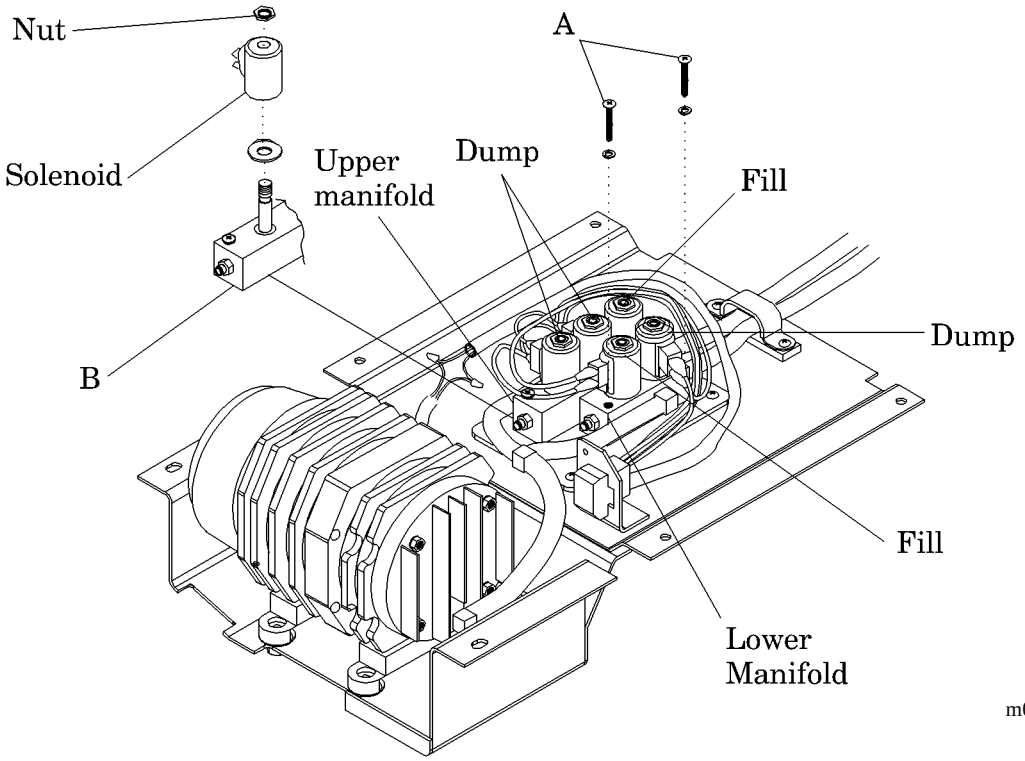
Unplug the bed from its power source. Failure to do so could result in personal injury or equipment damage.

2. Unplug the bed from its power source.

3. Remove the seat section cover. See “Cover—Seat Section” on page 4-17.

4. Remove the two screws (E) securing the compressor assembly (A) to the frame of the bed (see figure 4-11 on page 4-23).

Figure 4-11. Removing/Installing the DynamicAire Sleep Surface Compressor—Old Style



5. Detach the six pin connector (F) going to the compressor assembly (A).
6. Lift the compressor assembly (A) up and place it on the thigh section sleep surface.
7. Remove the hose clamp (C) and hose (B) from the compressor (A).
8. Remove the two wire joints attached to the lead wires from the compressor.
9. Remove the four nuts (D) from the bottom of the compressor (A).
10. Lift the compressor (A) out of the compressor assembly.

Replacement

1. Assemble in reverse order.
2. Test the DynamicAire Sleep Surface system to ensure that it works properly.
3. If your bed is equipped with the bed exit system, test the bed exit system to ensure that it works properly.

4.9 DynamicAire Sleep Surface Compressor—New Style

Tools required: T25 torx head screwdriver
Phillips head screwdriver
11/32" open end wrench
Small wire cutters

Removal

1. Raise the bed to the high position using the hilow function.

SHOCK HAZARD:

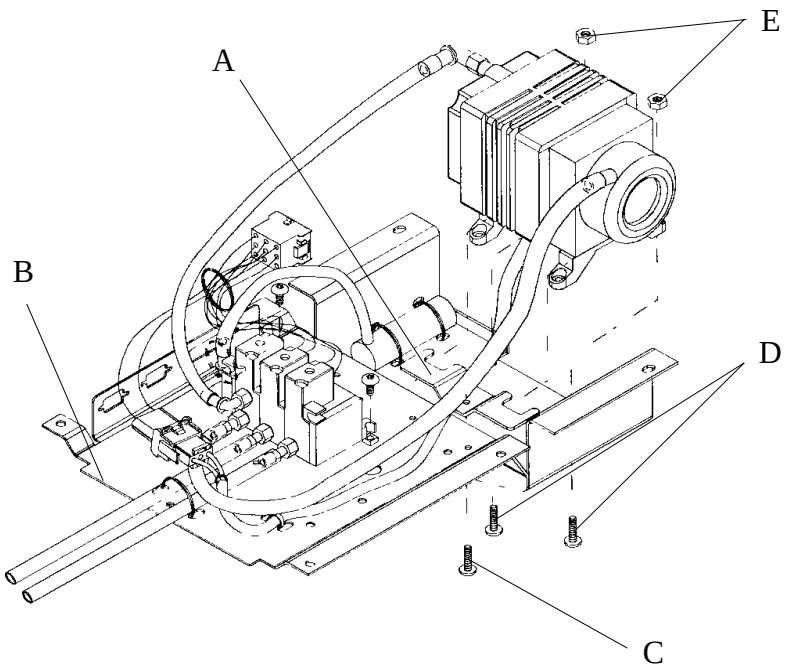
Unplug the bed from its power source. Failure to do so could result in personal injury or equipment damage.

2. Unplug the bed from its power source.

3. Remove the seat section cover. See “Cover—Seat Section” on page 4-17.

4. Remove the two screws securing the compressor assembly to the frame of the bed (see figure 4-12 on page 4-25).

Figure 4-12. Removing/Installing DynamicAire Sleep Surface Compressor—New Style



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5. Lift the compressor assembly up, and place it on the thigh section sleep surface.

6. Use the small wire cutters to remove the cable tie holding the large air hose to the compressor.

7. Remove both the large and small air hose from the compressor.

NOTE:
Push the air hoses from behind and off of the fittings for easy removal. The hoses will not come off if you try to pull them.

8. Unplug the connector from the compressor.

CAUTION:
Do not cut or scar the brass fitting on the DynamicAire Sleep Surface compressor (new style). This can cause an excessive airloss (and turn on the service required LED).

9. Cut the cable tie holding the connector to the compressor assembly.

10. If “A”, “B”, “C”, or “E” version bed:
    a. Remove the one screw (C) from the bottom of the compressor assembly.
    b. Remove the two screws (D) and nuts (E) securing the compressor to the assembly.

11. If “F” version bed, use a small drill bit to remove the four rivets from the bottom of the compressor assembly.

12. Remove the compressor from the assembly.

13. Pull the bracket off the rubber feet of the compressor.

Replacement

CAUTION:
Attach the large air hose to the DynamicAire Sleep Surface compressor (new style) with a cable tie. This will help prevent the hose from coming off during operation causing equipment damage.

Assemble in reverse order.

4.10 DynamicAire Sleep Surface Manifold

Tools required: T25 torx head screwdriver
Needle nose pliers
Phillips head screwdriver

Removal

1. Raise the bed to the high position using the hilow function.

SHOCK HAZARD:

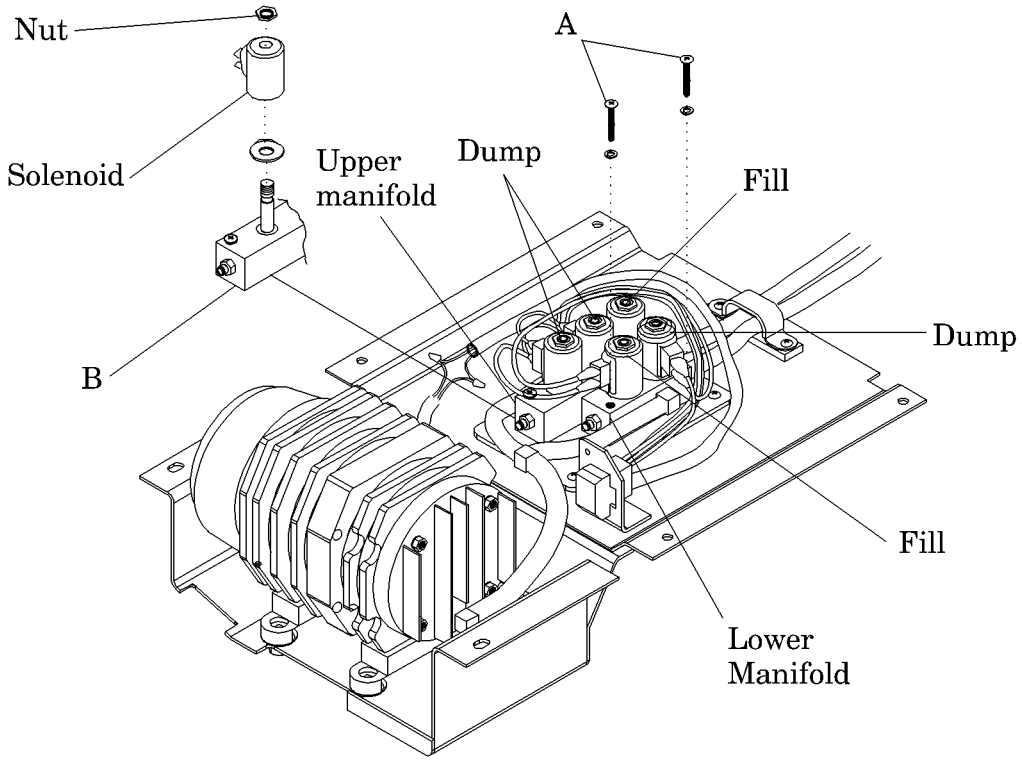
Unplug the bed from its power source. Failure to do so could result in personal injury or equipment damage.

2. Unplug the bed from its power source.
3. Remove the seat section cover. See “Cover—Seat Section” on page 4-17.
4. Remove the small hose clamp and small hose from the inoperative manifold.
5. Note the orientation, and remove the wires going to each solenoid on the inoperative manifold (see figure 4-13 on page 4-28).

NOTE:
Record the orientation of the wires going to the solenoids for the replacement procedure.

6. Remove the two screws (A).

Figure 4-13. DynamicAire Sleep Surface Manifold Replacement—Old Style



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7. Remove the large hose from the inoperative manifold.
8. Lift the inoperative manifold (B) from the assembly.

Replacement

Assemble in reverse order.

4.11 DynamicAire Sleep Surface Solenoid—Old Style

Tools required: T25 torx head screwdriver
Adjustable wrench

1. Raise the bed to the high position using the hilow function.

SHOCK HAZARD:

Unplug the bed from its power source. Failure to do so could result in personal injury or equipment damage.

2. Unplug the bed from its power source.

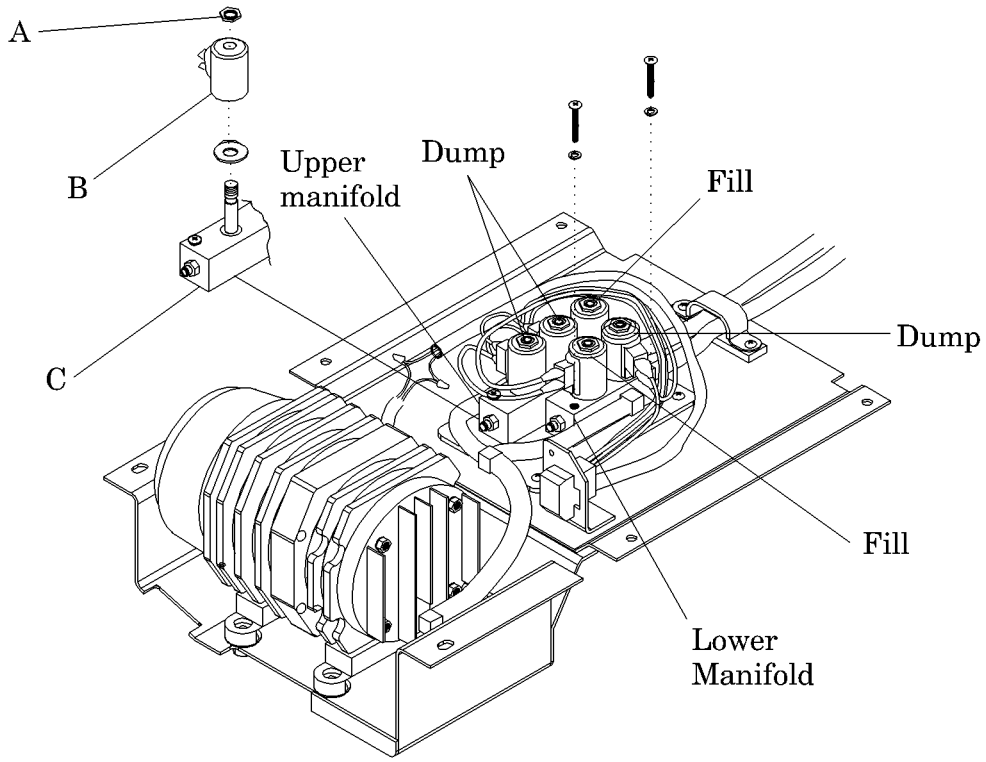
3. Remove the seat section cover. See “Cover—Seat Section” on page 4-17.

4. Note the orientation, and remove the wires going to each solenoid on the inoperative manifold (see figure 4-14 on page 4-30).

NOTE:
Note and record (write down) the orientation of the wires going to the solenoids for the replacement procedure.

5. Remove the nut (A) on top of the inoperative solenoid (B).

Figure 4-14. DynamicAire Sleep Surface Solenoid Replacement—Old Style



6. Lift the inoperative solenoid (B) up and off the manifold (C).

Replacement

Assemble in reverse order.

4.12 DynamicAire Sleep Surface Solenoid—New Style

Tools required: T25 torx head screwdriver
Phillips head screwdriver

Removal

1. Raise the bed to the high position using the hilow function.

SHOCK HAZARD:

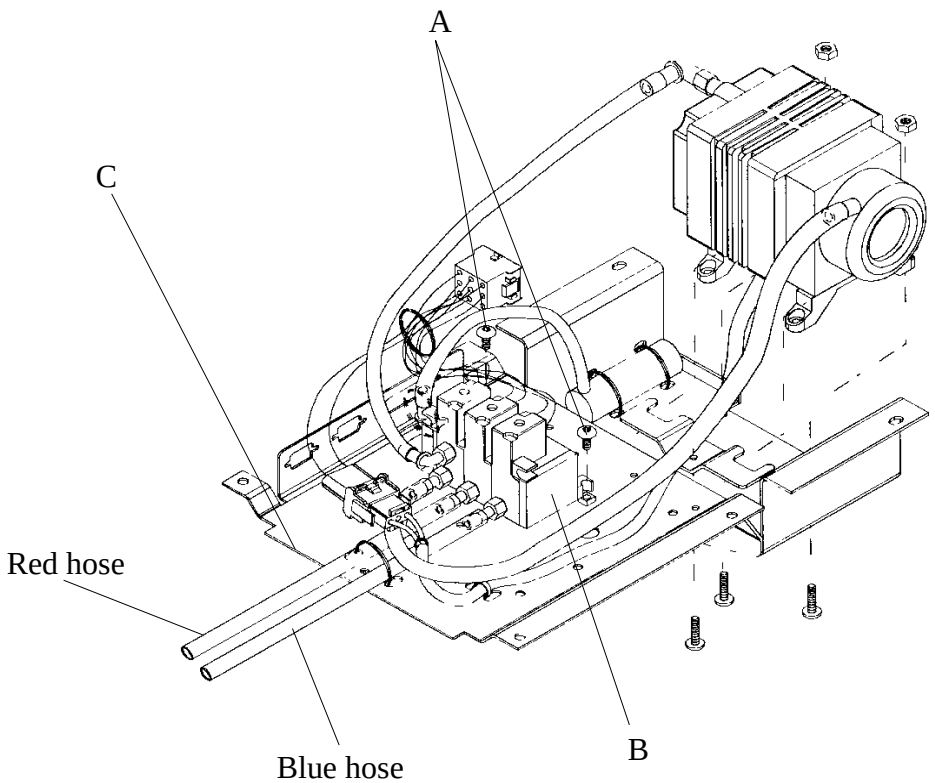
Unplug the bed from its power source. Failure to do so could result in personal injury or equipment damage.

2. Unplug the bed from its power source.

3. Remove the seat section cover. See “Cover—Seat Section” on page 4-17.

4. Unplug the solenoid connector (see figure 4-15 on page 4-31).

Figure 4-15. DynamicAire Sleep Surface Solenoid Replacement—New Style



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5. Note the orientation of the five air hoses to the solenoid (B).

NOTE:
Record the position of the air hoses for reassembly.

CAUTION:
Use caution when removing the five air hoses from the DynamicAire Sleep Surface solenoid (new style). The fittings are plastic and can break if abused during the removal process.

6. Remove the five air hoses from the solenoid (B). Push the air hoses from behind and off the fittings for easy removal. (The hoses will not come off if you try to pull them.)

7. Remove one of the two screws (A) connecting the solenoid (B) to the compressor assembly (C).

8. Loosen the remaining screw and remove the solenoid (B).

9. Remove the solenoid (B) from the compressor assembly (C).

Replacement

Assemble in reverse order.

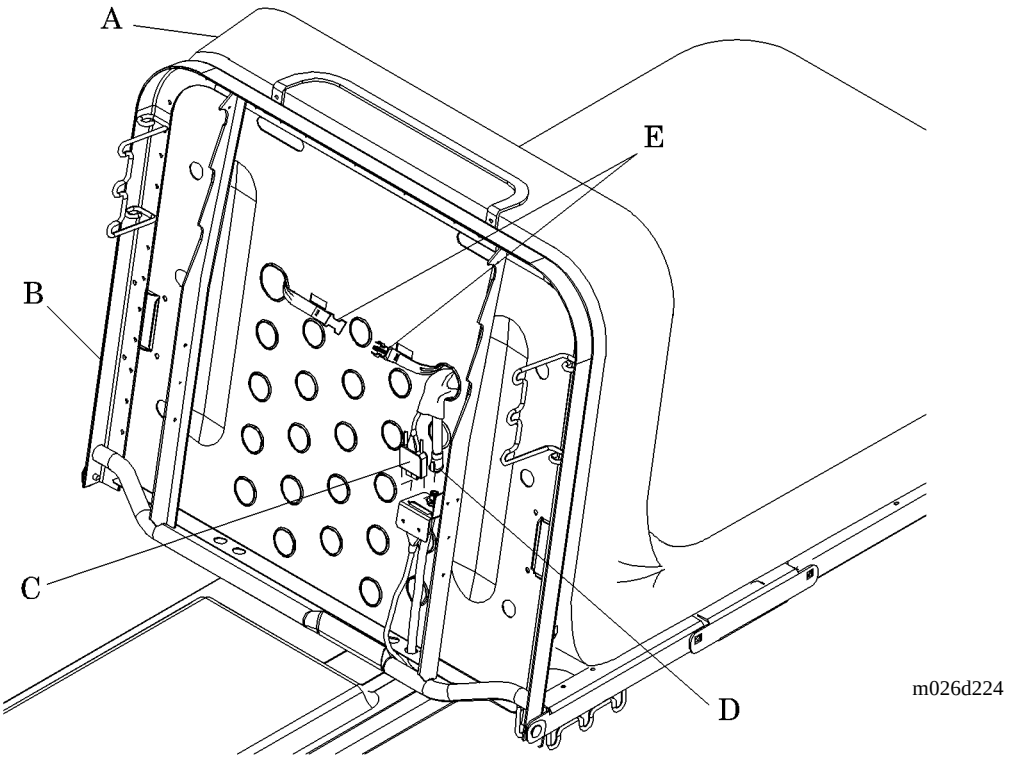
4.13 ZoneAire Sleep Surface Mattress

Tools required: None

Removal

1. Lift the foot section (B) to access the air hose coupling and cable connector (see figure 4-16 on page 4-33).

Figure 4-16. Foot Section of Sleep Surface Raised to Access ZoneAire Sleep Surface Mattress Connections



2. Depress the spring loaded coupling release to disconnect the mattress air hose from the bed (D).
3. Disconnect the cable connector (C).
4. Disconnect the plastic buckle (E) holding the mattress in place.
5. Remove the mattress (A).

Replacement

Assemble in reverse order.

4.14 ZoneAire Sleep Surface Sensor Control Board

Tools required: 3/16" nut driver
Screwdriver

Removal

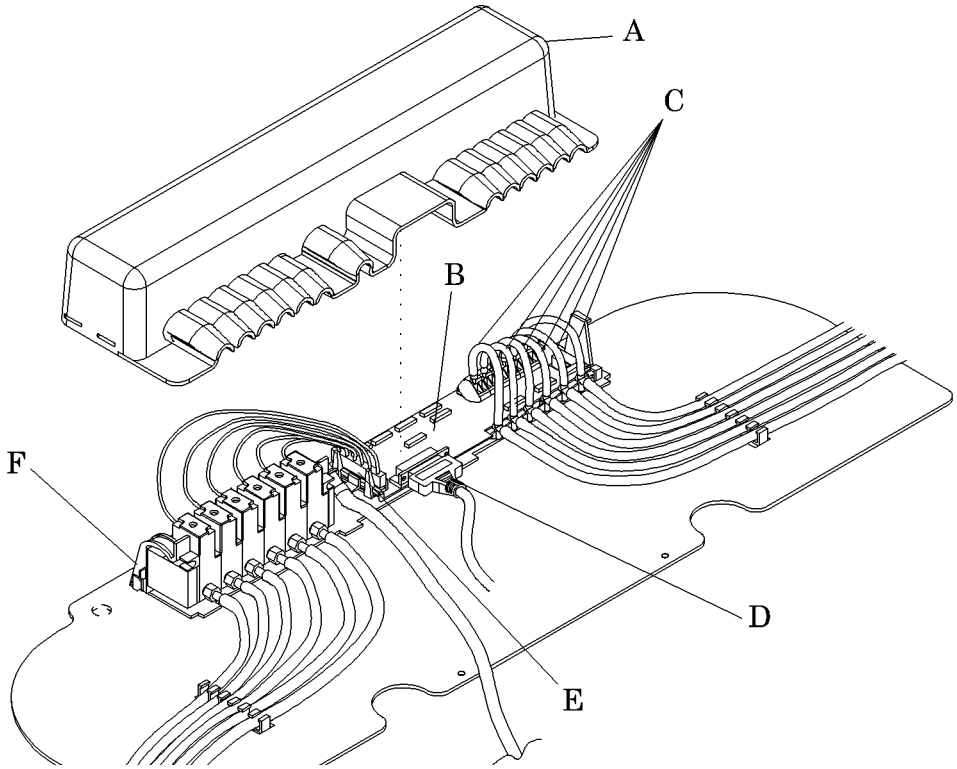
SHOCK HAZARD:

Unplug the bed from its power source. Failure to do so could result in personal injury or equipment damage.

1. Unplug the bed from its power source.
2. Store the foot siderails.
3. Remove the footboard control panel from the bed. See “Footboard Control Panel” on page 4-11.
4. Unzip the mattress to gain access to the components in the foot end of the mattress.
5. Remove the surface control cover (A) from the surface control frame (F) (see figure 4-17 on page 4-35).

CAUTION:
Ensure that your hands are clean, and handle the P.C. boards by their edges **only** to prevent component damage. Wear an appropriate static strap when working with electronics. Equipment damage can occur. See “P.C. Boards” on page 6-4 for additional information.

Figure 4-17. ZoneAire Sleep Surface Sensor Control Board—Cover Removed



6. Use a standard head screwdriver to disconnect the mattress cable connector (D) from the sensor control board (B).

7. Disconnect the surface valves connector (E) from the sensor control board (B).

8. Note the orientation of the six tan colored hoses (C) from the sensor control board.

NOTE:
Record the orientation of the tan colored hoses before removing them from the sensor control board. This identification is necessary for the replacement procedure.

9. Remove the six tan colored hoses (C) from the sensor control board.

10. Remove the sensor control board (B) from the frame as follows:
    a. If standoffs are used to secure the sensor control board, compress the standoffs while lifting upward on the sensor control board.
    b. If screwlocks are used to secure the sensor control board, use a 3/16" nut driver to remove the two screwlocks, then push the lever holding the sensor control board (B) to the frame (F).

11. Remove the sensor control board (B).

Replacement

Assemble in reverse order.

NOTE:
Ensure the orientation of the six tan colored hoses is identical to the original orientation.

4.15 ZoneAire Sleep Surface Sensor Control Valve

Tools required: Extraction tool (P/N SA3658)
Phillips head screwdriver

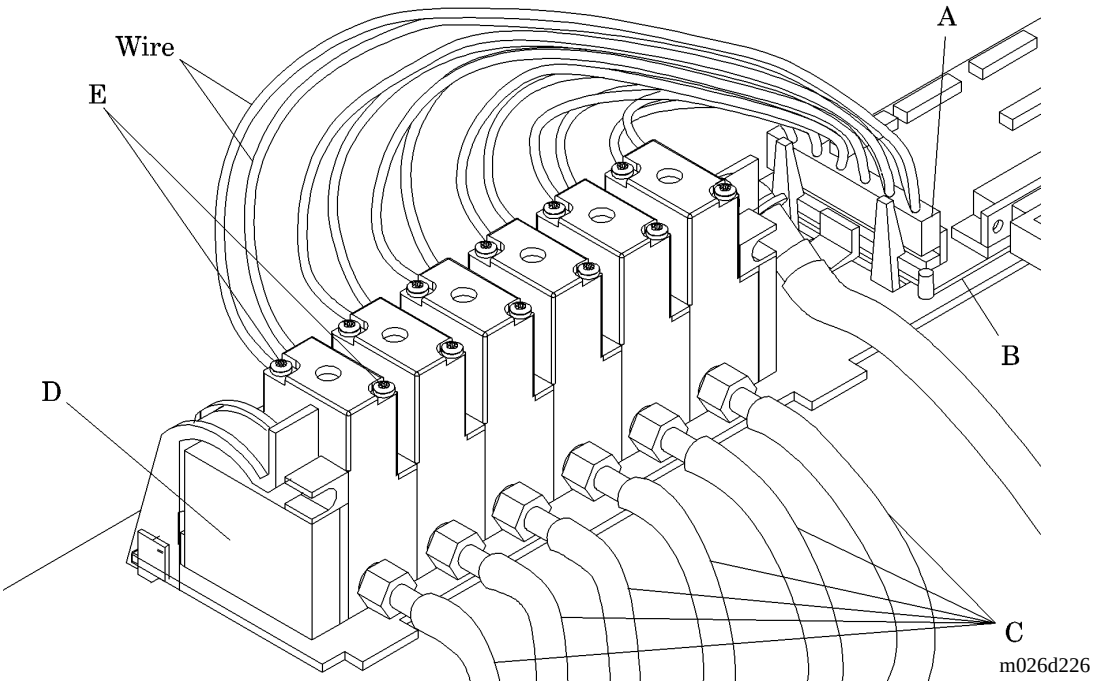
Removal

SHOCK HAZARD:

Unplug the bed from its power source. Failure to do so could result in personal injury or equipment damage.

1. Unplug the bed from its power source.
2. Remove the footboard control panel from the bed. See “Footboard Control Panel” on page 4-11.
3. Unzip the mattress to gain access to the components in the foot end of the mattress.
4. Remove the surface control cover (A) from the surface control frame (F) (see figure 4-17 on page 4-35).
5. Disconnect the surface valves connector (A) from the sensor control board (B) (see figure 4-18 on page 4-38).

Figure 4-18. ZoneAire Sleep Surface Sensor Control Valve Location



6. Identify (match mark) each of the six air tubes (C) to its corresponding valve on the sensor control valve assembly (D).

NOTE:
Record (identify) the orientation of the hoses before removing them from the sensor control valve. This identification is necessary for the replacement procedure.

7. If only certain valve assemblies are being removed:
   a. Remove the air tubes (C) from these valves.
   b. Use the extraction tool to remove the corresponding wires (two for each valve) going to the connector (B).
   c. Remove two screws (E) holding each valve assembly to the manifold.
   d. Carefully lift the sensor control valve(s) from the manifold.

8. If entire assembly is being removed:
   a. Remove the six air tubes (C) from the sensor control valves.
   b. Push the valve release arms on the surface control frame, and remove the complete sensor control valve assembly (D).

Replacement

Assemble in reverse order.

NOTE:
Ensure that the six air tubes are connected to its corresponding valve per their original orientation.

4.16 ZoneAire Sleep Surface Power Supply P.C. Board

Tools required: T25 torx head screwdriver
Phillips head screwdriver
3/16" nut driver

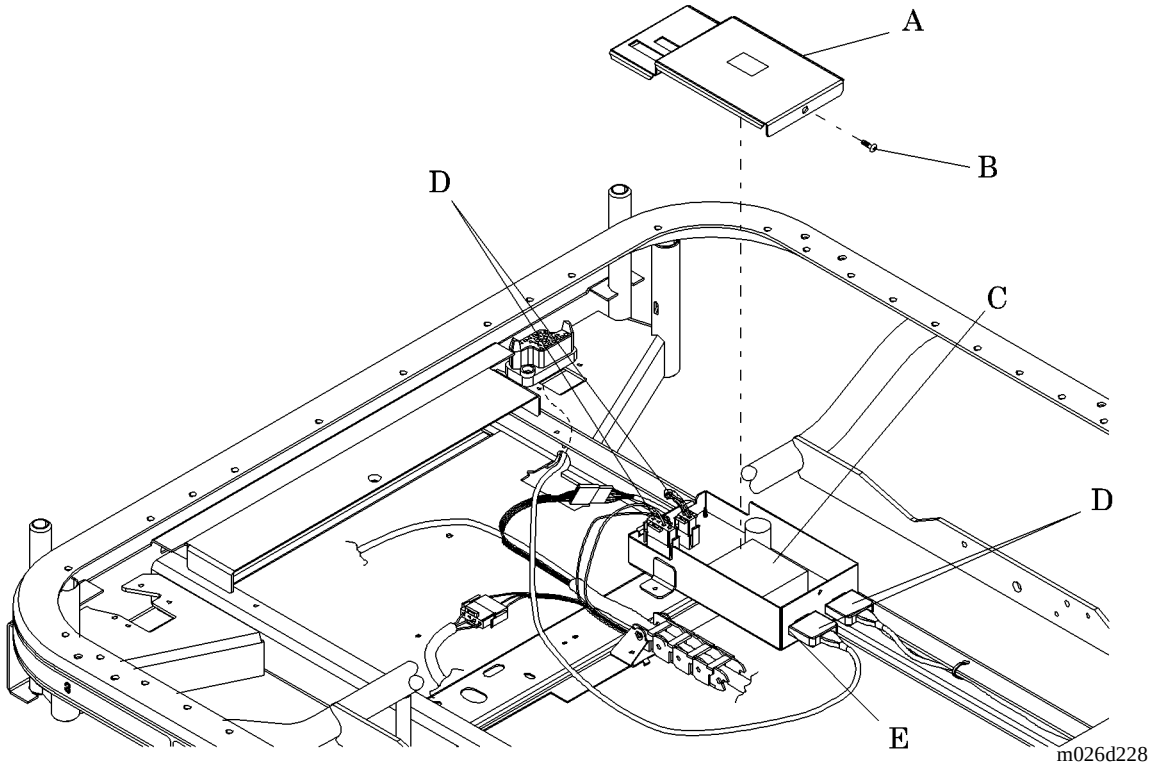
Removal

SHOCK HAZARD:

Unplug the bed from its power source. Failure to do so could result in personal injury or equipment damage.

1. Unplug the bed from its power source.
2. Remove the footboard control panel from the bed. See “Footboard Control Panel” on page 4-11.
3. Remove the foot end cover. See “Cover—Foot End” on page 4-13.
4. Remove the screw (B) from the cover (A) of power supply box (see figure 4-19 on page 4-40).

Figure 4-19. Removing/Installing Cover on ZoneAire Sleep Surface Power Supply Box



5. Remove the four connectors (D) going to the power supply box (P.C. board).

CAUTION:
Ensure that your hands are clean, and handle the P.C. boards by their edges **only** to prevent component damage. Wear an appropriate static strap when working with electronics. Equipment damage can occur. See “P.C. Boards” on page 6-4 for additional information.

6. Remove the cover (A) from the power supply box.

7. Use the 3/16" nut drive to remove the screw locks (E) holding the power supply P.C. board to the power supply box.

8. Compress the standoffs, and remove the power supply P.C. board (C).

Replacement

Assemble in reverse order.

4.17 ZoneAire Sleep Surface Air Control P.C. Board

Tools required: T25 torx head screwdriver
Phillips head screwdriver

Removal

1. Raise the bed to the high position using the hilow function.

SHOCK HAZARD:

Unplug the bed from its power source. Failure to do so could result in personal injury or equipment damage.

2. Unplug the bed from its power source.

3. Remove the mattress and seat section cover. See “Cover—Seat Section” on page 4-17.

4. Disconnect the eight connectors (A) going to the ZoneAire Sleep Surface air control P.C. board (see figure 4-20 on page 4-43 or figure 4-21 on page 4-43).

CAUTION:

Ensure that your hands are clean, and handle the P.C. boards by their edges **only** to prevent component damage. Wear an appropriate static strap when working with electronics. Equipment damage can occur. See “P.C. Boards” on page 6-4 for additional information.

Figure 4-20. ZoneAire Sleep Surface Air Control P.C. Board Connections—Old Style Shown

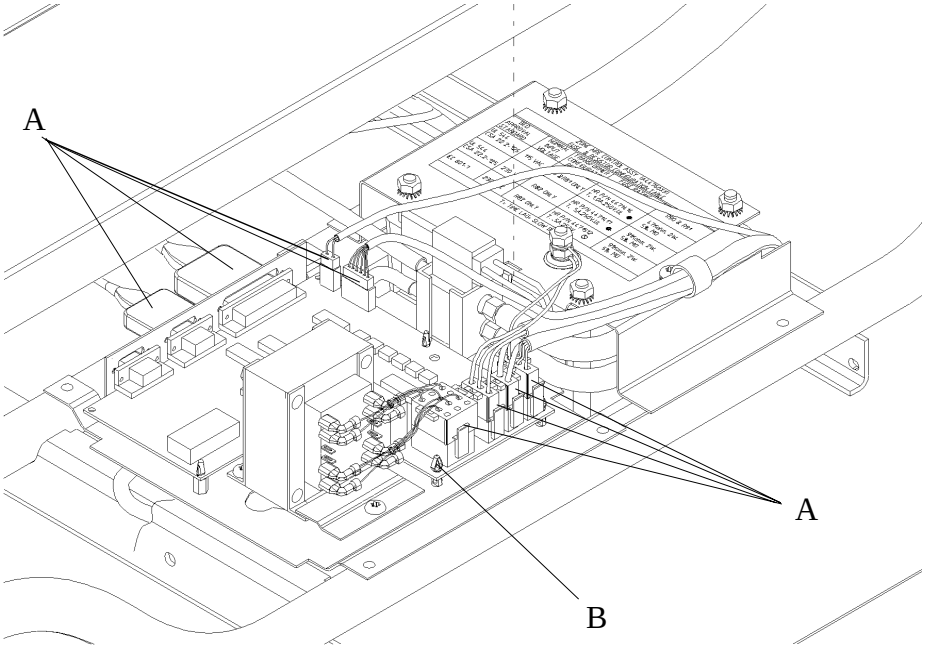


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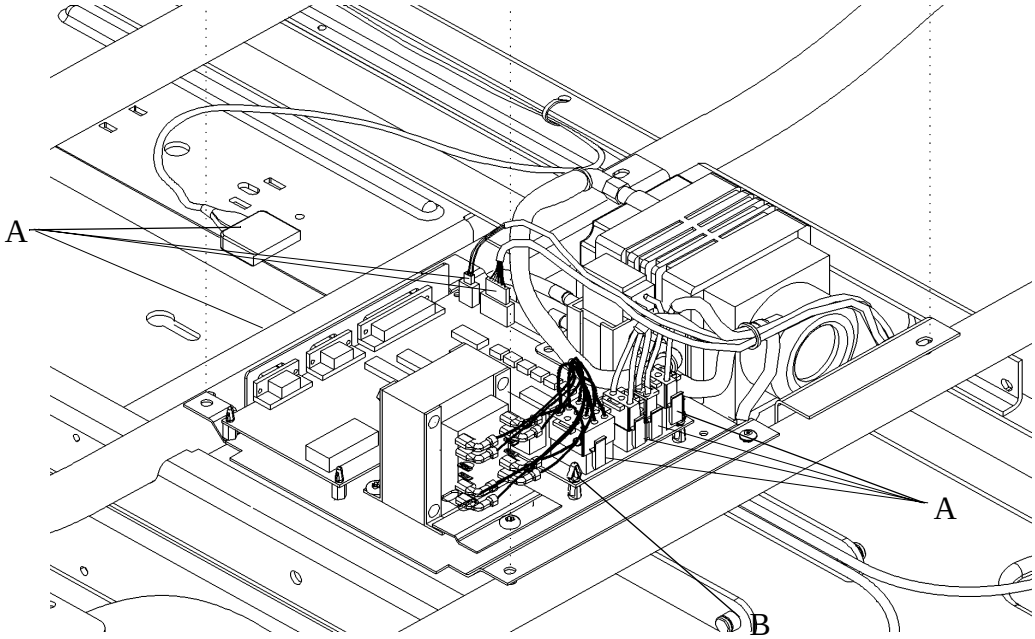
Figure 4-21. ZoneAire Sleep Surface Air Control P.C. Board Connections—New Style Shown



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5. Compress the standoffs (B) and remove the ZoneAire Sleep Surface air control P.C. board (C).

Replacement

Assemble in reverse order.

4.18 ZoneAire Sleep Surface Switching Valve Assembly

Tools required: T25 torx head screwdriver
Phillips head screwdriver
Screwdriver

Removal

1. Raise the bed to the high position using the hilow function.

SHOCK HAZARD:

Unplug the bed from its power source. Failure to do so could result in personal injury or equipment damage.

2. Unplug the bed from its power source.

3. Remove the mattress and seat section cover. See “Cover—Seat Section” on page 4-17.

4. Disconnect the connector (A) going to the ZoneAire Sleep Surface air control P.C. board (see figure 4-22 on page 4-45 or figure 4-23 on page 4-46).

Figure 4-22. ZoneAire Sleep Surface Air Control Module—Old Style Shown

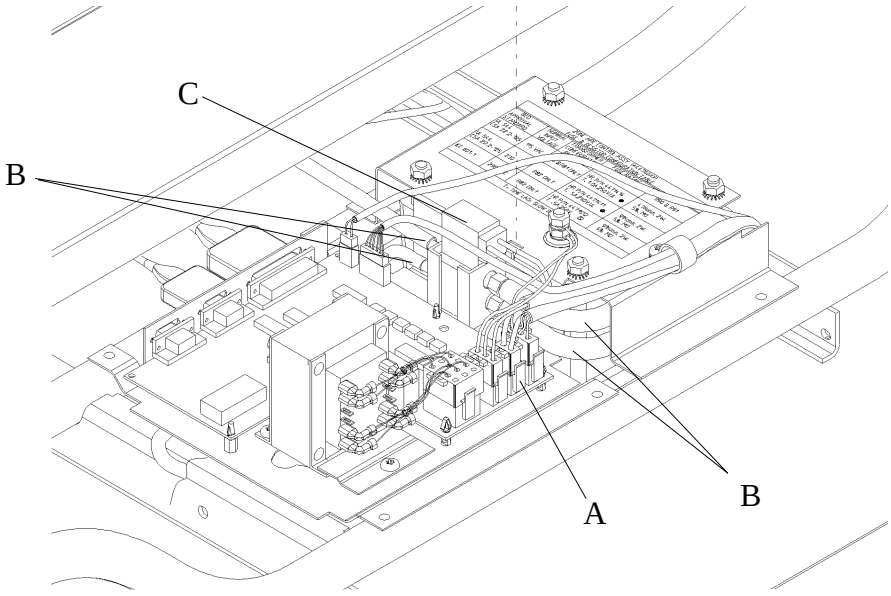

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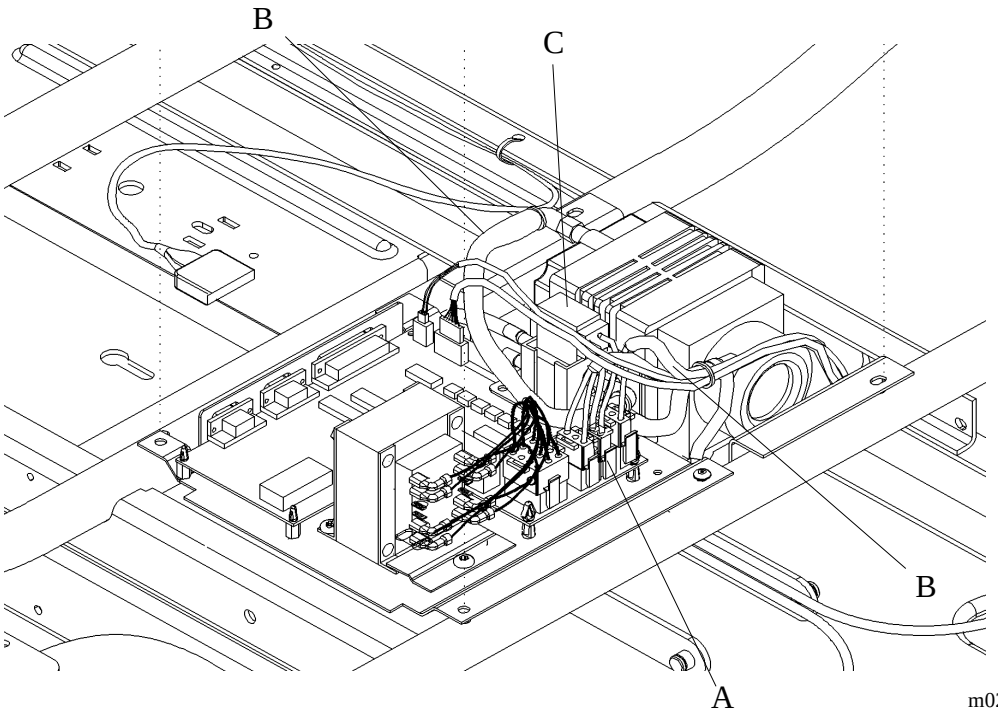
Figure 4-23. ZoneAire Sleep Surface Air Control Module—New Style Shown



5. Remove the hoses (B) connected to the switching valve assembly (C).
6. Insert the standard head screwdriver between the switching valve assembly (C) and the pump module base assembly.
7. Use the screwdriver to carefully pry and lift the switching valve assembly (C) out of the assembly.

Replacement

Assemble in reverse order.

4.19 ZoneAire Sleep Surface Transformer

Tools required: T25 torx head screwdriver
Phillips head screwdriver

Removal

1. Raise the bed to the high position using the hilow function.

SHOCK HAZARD:

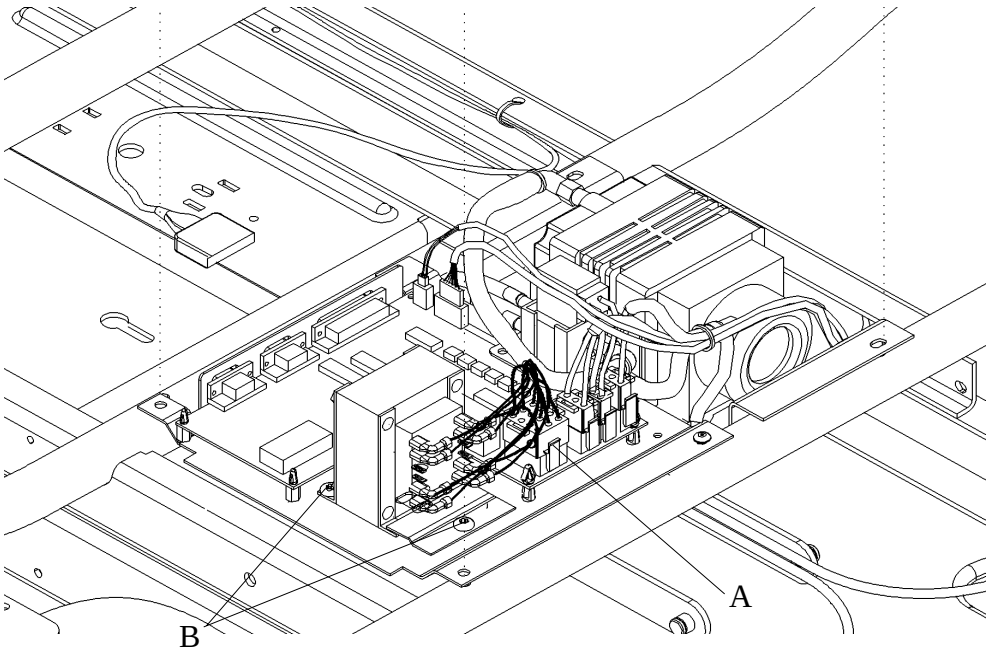
Unplug the bed from its power source. Failure to do so could result in personal injury or equipment damage.

2. Unplug the bed from its power source.

3. Remove the mattress and seat section cover. See “Cover—Seat Section” on page 4-17.

4. Disconnect the connector (A) from the transformer to the ZoneAire Sleep Surface air control P.C. board (see figure 4-24 on page 4-47).

Figure 4-24. ZoneAire Sleep Surface Transformer Location—New Style Air Supply Module Shown



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5. Remove the three screws (B) securing the transformer to the air supply module (in the graphic, the third screw is hidden by the transformer).

6. Remove the transformer.

Replacement

1. Remove the wires, one at a time, from the old transformer, and place them on the new transformer.

2. Assemble in reverse order.

4.20 ZoneAire Sleep Surface Compressor—Old Style

Tools required: T25 torx head screwdriver
Phillips head screwdriver
Screwdriver
7/16" nut driver or socket with ratchet

Removal

1. Raise the bed to the high position using the hilow function.

SHOCK HAZARD:

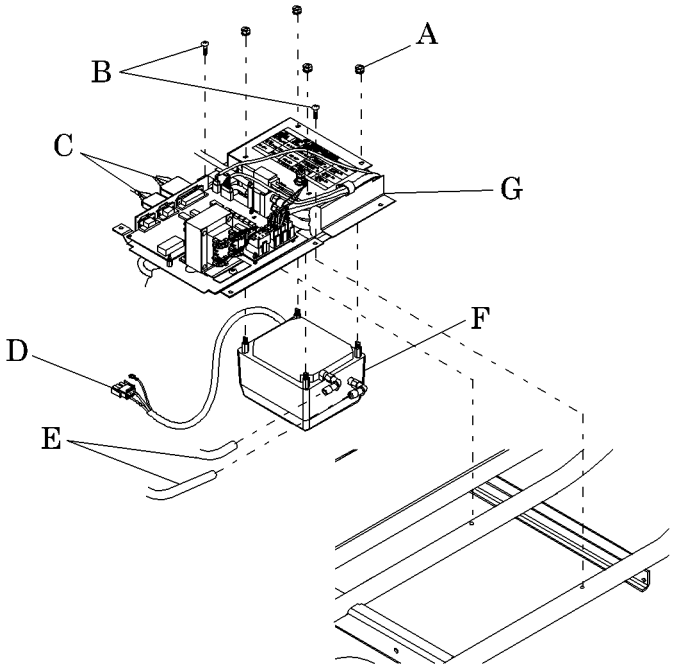
Unplug the bed from its power source. Failure to do so could result in personal injury or equipment damage.

2. Unplug the bed from its power source.

3. Remove the mattress and seat section cover. See “Cover—Seat Section” on page 4-17.

4. Disconnect the two connectors (C) going from the ZoneAire Sleep Surface air control P.C. board to the power supply P.C. board (see figure 4-25 on page 4-49).

Figure 4-25. Removing/Installing ZoneAire Sleep Surface Compressor—Old Style



5. Remove the two screws (B) holding the air control module to the bed.
6. Lift the pump module base assembly (G) up and lay it on the sleep surface.
7. Disconnect the connectors (D) from the compressor (F) to the air control P.C. board.
8. Remove the air hoses (E) from the compressor to the switching valve assembly.
9. Remove the four keps nuts (A)”
10. Remove the compressor (F).

Replacement

Assemble in reverse order.

4.21 ZoneAire Sleep Surface Compressor—New Style

Tools required:
- T25 torx head screwdriver
- Phillips head screwdriver
- 11/32" open end wrench
- Small wire cutters
- Small drill bit
- Drill
- Pop rivet tool

Removal

1. Raise the bed to the high position using the hilow function.

SHOCK HAZARD:

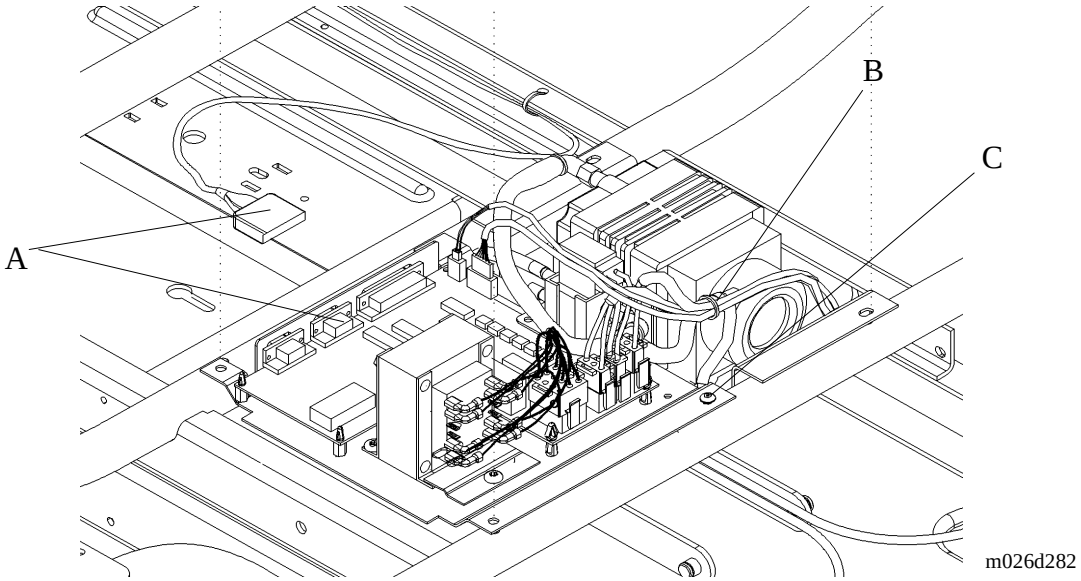
Unplug the bed from its power source. Failure to do so could result in personal injury or equipment damage.

2. Unplug the bed from its power source.

3. Remove the mattress and seat section cover. See “Cover—Seat Section” on page 4-17.

4. Disconnect the two connectors (A) going from the ZoneAire Sleep Surface air control P.C. board to the power supply P.C. board (see figure 4-26 on page 4-51).

Figure 4-26. ZoneAire Sleep Surface Air Control Module—New Style Shown



5. Remove the two screws (C) securing the compressor assembly to the frame of the bed.

6. Lift the compressor assembly up and place it on the thigh section sleep surface.

CAUTION:
Do not cut or scar the brass fitting on the ZoneAire Sleep Surface compressor (new style). This can cause an excessive air loss (and turn on the service required LED).

7. Use the small wire cutters to remove the cable tie (B) holding the large air hose to the compressor.

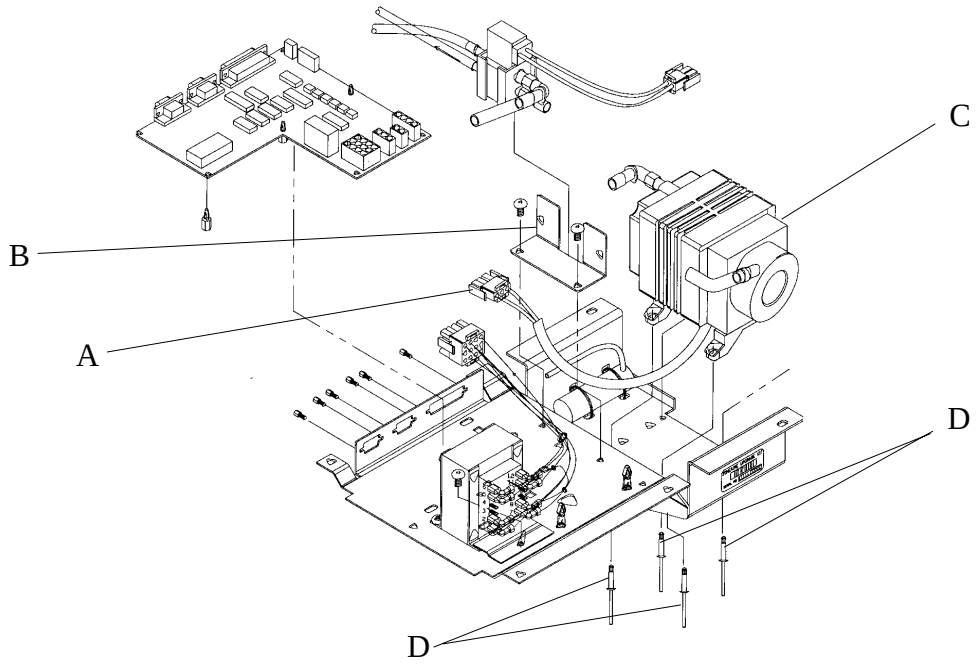
CAUTION:
Use caution when removing the air hoses from the ZoneAire Sleep Surface solenoid. The fittings are plastic and can break if abused during the removal process.

8. Remove both the large and small air hose from the compressor. Do **not** cut the brass fitting if you cut the air hose from the compressor.

NOTE:
Push the air hoses from behind and off of the fittings for easier removal. The hoses will not come off if you try to pull them.

9. Unplug the connector (A) from the air control P.C. board (see figure 4-27 on page 4-53).

Figure 4-27. Removing/Installing ZoneAire Sleep Surface Compressor—New Style



10. Use a small drill bit to remove the four rivets (D) from the bottom of the compressor assembly (C).

11. Remove the compressor (C) from the air control module.

12. Remove the bracket (B) attached to the feet of the compressor.

Replacement

Assemble in reverse order.

CAUTION:
Attach the large air hose to the ZoneAire Sleep Surface compressor with a cable tie. This will help prevent the hose from becoming unattached during operation which can cause equipment damage.

4.22 Nurse Control Panel and/or Cable—Scale Beds Only

Tools required: Phillips head screwdriver
Small pliers

Removal

CAUTION:
Unplug the bed from its power source before removing or installing the footboard control panel. Damage can occur to the electronics in the footboard control panel during removal or installation if the bed is plugged into its power source.

1. Remove the footboard control panel. See “Footboard Control Panel” on page 4-11.

2. Remove the four screws (G) connecting the receptacle housings to the receptacle brackets (see figure 4-28 on page 4-54 and figure 4-29 on page 4-55).

Figure 4-28. Nurse Control Panel and/or Cable Replacement “E” Version Beds and Prior—Scale Beds Only

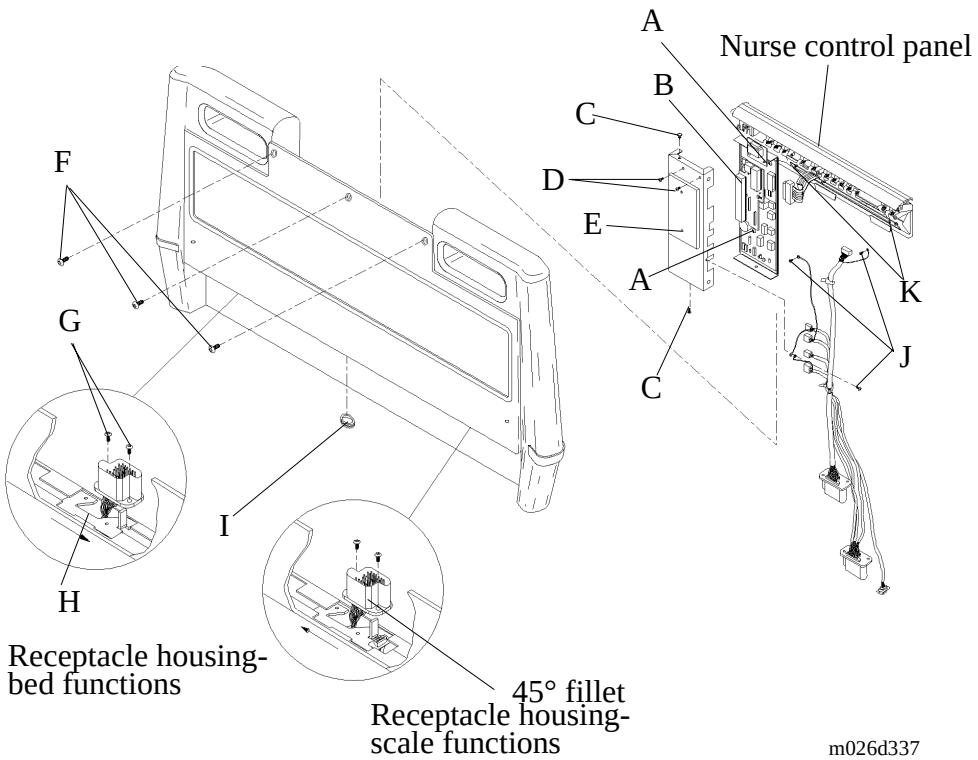
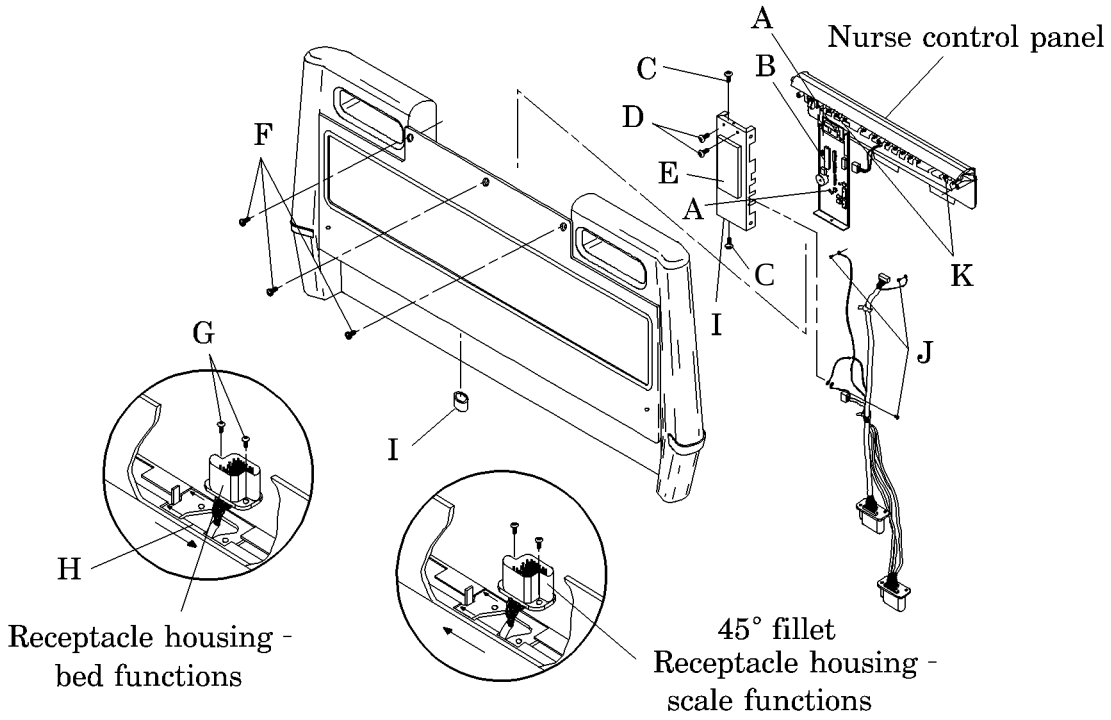


Figure 4-29. Nurse Control Panel and/or Cable Replacement "F" Version Beds—Scale Beds Only



NOTE:
Mark the location and orientation of the two receptacles being removed in the step for reassembly.

3. Slide the grommet and receptacle brackets toward the center of the footboard control panel until they can be removed.

4. Remove the three screws (F) securing the nurse control panel to the footboard control panel.

5. Lift the nurse control panel straight up from the footboard control panel.

CAUTION:
Be careful not to damage the control cables when removing them from the footboard control panel.

6. To remove a cable assembly, remove the appropriate wire ties and grounding screws (J). Disconnect the connector from the scale-micro board (B) or nurse control panel.

7. To remove the nurse control panel or the scale-micro board (B), remove the screws (D) and (E). Remove the box cover.

8. Remove the scale-micro board by removing the three screws (A) (in the graphic, the third screw is hidden).

9. The nurse control panel can be removed by removing two screws (K).

Replacement

Assemble in reverse order.

NOTE:
Ensure the 45° corner fillets on the receptacle housings are properly oriented in the footboard control panel.

4.23 Nurse Control Panel and/or Cable—Non-Scale Beds Only

Tools required: Phillips head screwdriver
Small pliers

Removal

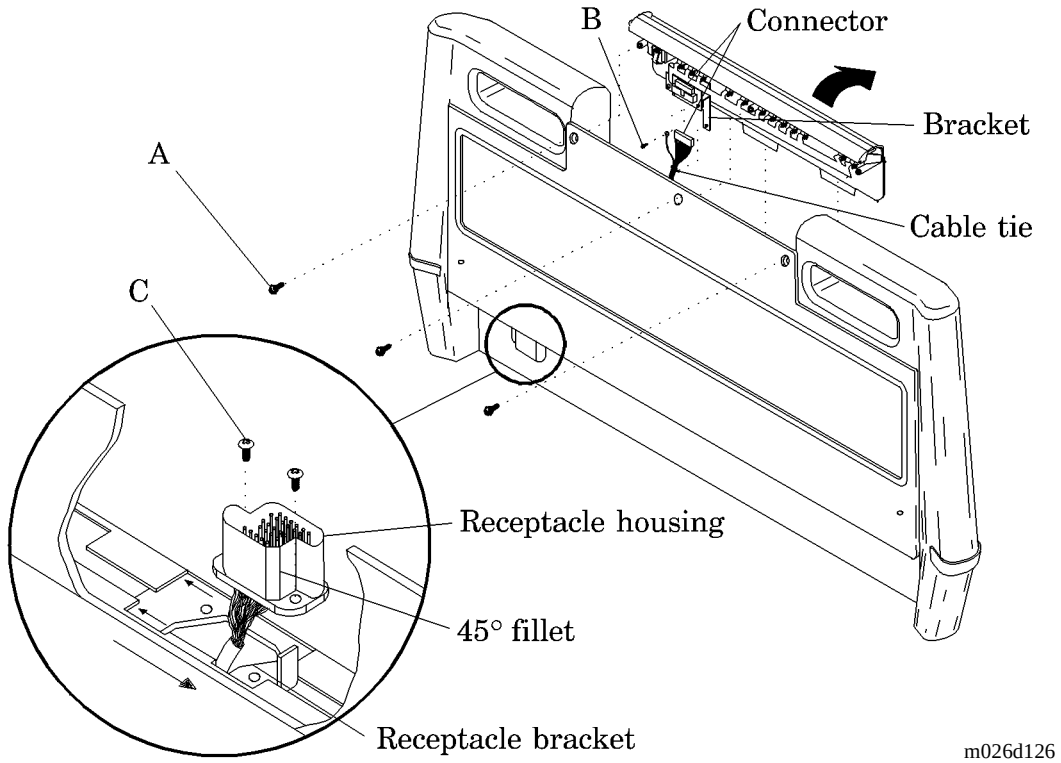
CAUTION:
Unplug the bed from its power source before removing or installing the footboard control panel. Damage can occur to the electronics in the footboard control panel during removal or installation if the bed is plugged into its power source.

1. Remove the footboard control panel. See “Footboard Control Panel” on page 4-11.

2. Remove the two screws (H) connecting the receptacle housing to the receptacle bracket (see figure 4-30 on page 4-57).

3. Remove the three screws (A) securing the nurse control panel to the footboard control panel.

Figure 4-30. Nurse Control Panel and/or Cable Replacement—Non-Scale Beds Only



4. The nurse control panel can now be tilted out at the top edge and lifted up until restrained by the nurse control cable.

5. Remove screw (B) connecting the ground strap wire to the nurse control panel.

6. Using the small pliers, compress the tab on the cable tie and remove the cable tie from the bracket.

7. Gently separate the 26 pin cable connector.

CAUTION:
Be careful not to damage the control cable when removing it from the nurse control panel.

8. If the nurse control cable is being removed:
   a. Remove the two screws (C) connecting the receptacle housing to the receptacle bracket.
   b. Slide the grommet and receptacle bracket toward the center of the footboard control panel until the cable can be removed.

NOTE:
Mark the location and orientation of the receptacle being removed in this step for reassembly.

Replacement

Assemble in reverse order.

NOTE:
Ensure the 45° corner fillet on the receptacle housing is properly oriented in the footboard control panel.

4.24 Nurse Control Panel—Membrane Type Footboard (Scale Bed)

Tools required: Phillips head screwdriver
Small pliers

Removal

CAUTION:
Unplug the bed from its power source before removing or installing the footboard control panel. Damage can occur to the electronics in the footboard control panel during removal or installation if the bed is plugged into its power source.

1. Remove the footboard control panel. See “Footboard Control Panel” on page 4-11.

2. Remove the three screws (F) securing the nurse control panel to the footboard control panel (see figure 4-31 on page 4-59 and figure 4-32 on page 4-60).

Figure 4-31. Nurse Control Panel for “E” Versions and Prior Beds—Membrane Type Footboard (Scale Bed)

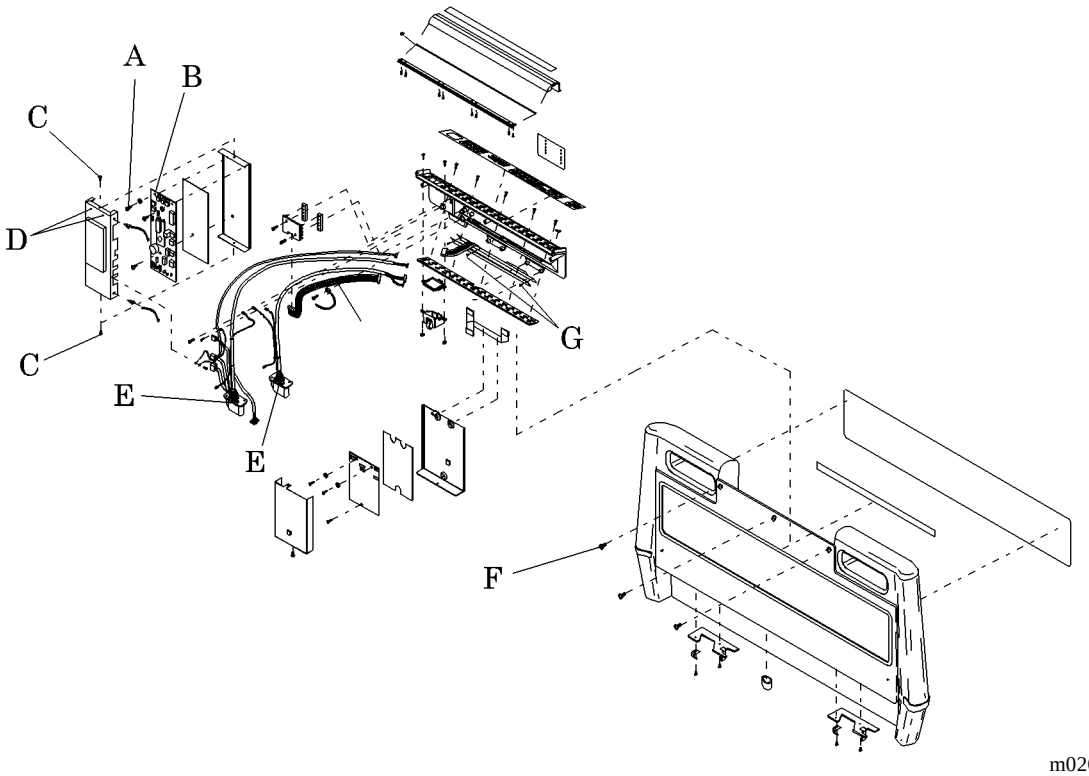


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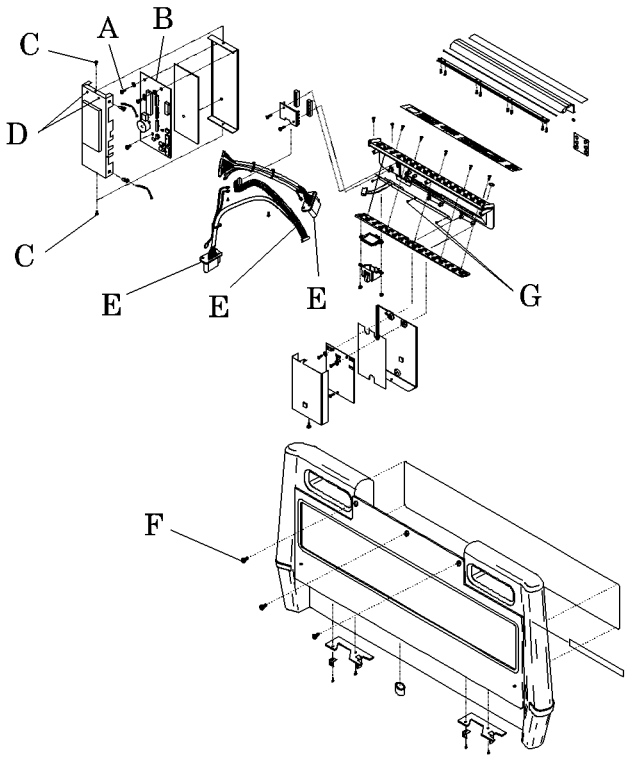
Figure 4-32. Nurse Control Panel for "F" Version Beds—Membrane Type Footboard (Scale Bed)



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NOTE:
Mark the location and orientation of the two receptacles being removed in the step for reassembly.

3. Remove the four screws (C) connecting the receptacle housings (two per connector) to the receptacle brackets (see figure 4-28 on page 4-54).

4. Slide the grommet and receptacle brackets, one at a time, toward the center of the footboard control panel until they reach an opening approximately 1/3 the distance from the left side of the footboard. Gently pull the connector (and attached cables) to keep the slack from bunching inside the footboard.

CAUTION:
Be careful not to damage the control cables when removing them from the footboard control panel.

5. Lift the nurse control panel straight up from the footboard control panel.

6. To remove a cable assembly (E), remove the appropriate wire ties and grounding screws (see figure 4-31 on page 4-59). Disconnect the connector from the scale-micro board (B) or nurse control panel.

7. To remove the nurse control panel or the scale-micro board (B), remove the screws (C) and (D). Remove the box cover.

8. Remove the scale-micro board by removing the three screws (A).

9. The nurse control panel can be removed by removing two screws (G).

Replacement

Assemble in reverse order.

NOTE:
Ensure the 45° corner fillets on the receptacle housings are properly oriented in the footboard control panel. If “E” version and prior beds, the 9-pin data cable belongs on the right side of the footboard (it does not go inside the bracket with the wires attached to the connector), and sits on the “V” cutout on the right bracket. The “F” version bed does not have the 9-pin data cable. Do not tighten the frame-mounted mating receptacles for the footboard connectors, these are to be loose to aid in self-alignment.

4.25 Nurse Control Panel—Membrane Type Footboard (Non-Scale Bed)

Tools required: Phillips head screwdriver
Small pliers

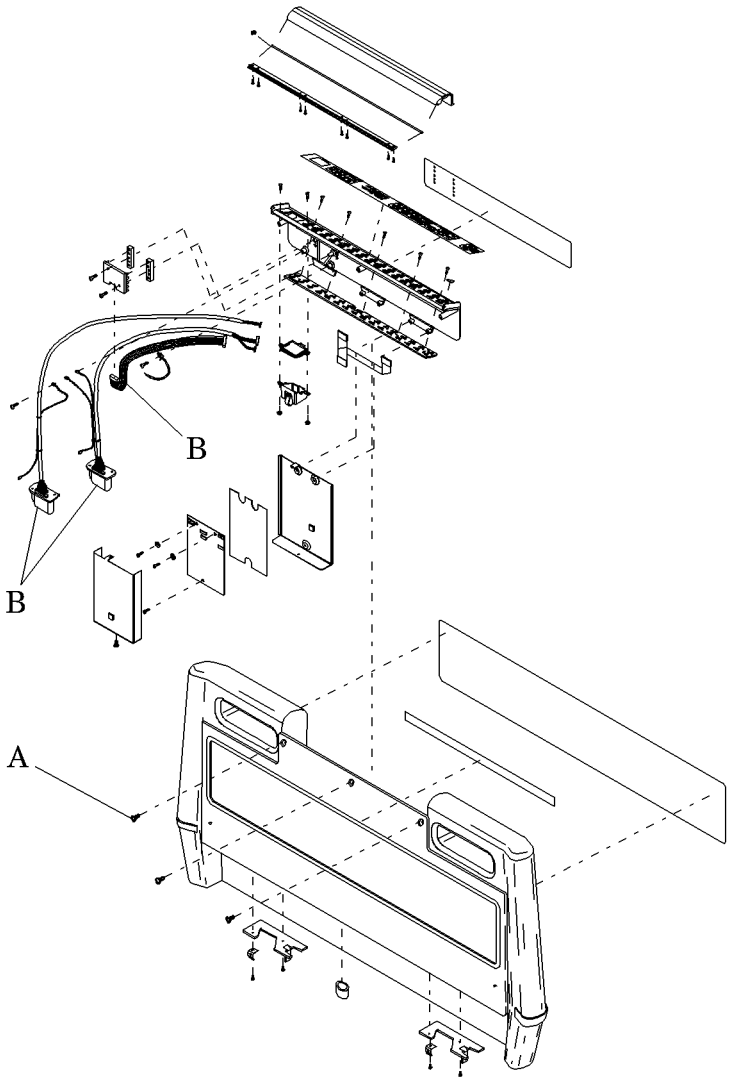
Removal

CAUTION:
Unplug the bed from its power source before removing or installing the footboard control panel. Damage can occur to the electronics in the footboard control panel during removal or installation if the bed is plugged into its power source.

1. Remove the footboard control panel. See “Footboard Control Panel” on page 4-11.

2. Remove the three screws (A) securing the nurse control panel to the footboard control panel (see figure 4-33 on page 4-63).

Figure 4-33. Nurse Control Panel—Membrane Type Footboard (Non-Scale Bed)



NOTE:
Mark the location and orientation of the two receptacles being removed in the step for reassembly.

3. Remove the two screws (H) connecting the receptacle housing to the receptacle bracket (see figure 4-30 on page 4-57).

4. Slide the grommet and receptacle bracket toward the center of the footboard control panel until it reaches an opening approximately 1/3 the distance from the left side of the footboard. Gently pull the connector (and attached cables) to keep the slack from bunching inside the footboard.

CAUTION:
Be careful not to damage the control cables when removing them from the footboard control panel.

5. Lift the nurse control panel straight up from the footboard control panel.

6. To remove a cable assembly (B), remove the appropriate wire ties and grounding screws (see figure 4-33 on page 4-63). Disconnect the connector from the nurse control panel.

Replacement

Assemble in reverse order.

NOTE:
Ensure the 45° corner fillet on the receptacle housing is properly oriented in the footboard control panel.

4.26 Nurse Control Panel Switch

Tools required:
- 5/16" open end wrench
- 60 lead 40 tin solder
- Needle nose pliers
- 30W maximum soldering iron
- Phillips head screwdriver
- Small wire cutters

Removal

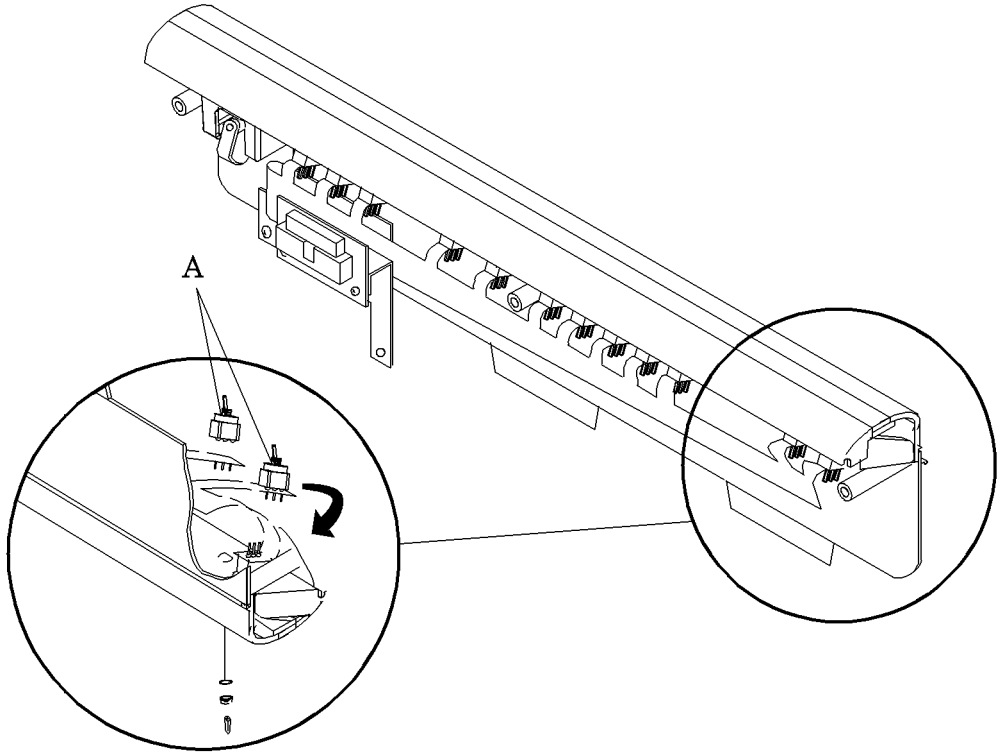
CAUTION:
Unplug the bed from its power source before removing or installing the footboard control panel. Damage can occur to the electronics in the footboard control panel during removal or installation if the bed is plugged into its power source.

1. Remove the nurse control panel from the footboard. See “Nurse Control Panel and/or Cable—Non-Scale Beds Only” on page 4-57.

CAUTION:
Ensure that the flex circuit to the nurse control panel switch is not damaged when removing the old switch and installing the new switch. Overheating the flex circuit will cause delamination, resulting in a shorted or open circuit condition.

2. Remove the inoperative switch (A) from the nurse control panel assembly (see figure 4-34 on page 4-66).

Figure 4-34. Nurse Control Panel Switch Replacement



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CAUTION:
Ensure that the flex circuit is not cut when cutting the terminals on the inoperative switch.

3. Use the small wire cutters and cut each soldered terminal from the back of the switch.

Replacement

1. Hold each solder terminal separately with the needle nose pliers and use minimum heat to melt the old solder and remove the terminals.

2. Install the replacement switch in the flex circuit and solder using the 60 lead 40 tin, rosin core solder with minimum heat.

NOTE:
There are two types of switches in the nurse control panel—eight or nine toggle switches and four momentary switches. Ensure to use the proper replacement switch.

3. Install the switch in the nurse control panel. Tighten the switch retaining nut to a maximum of 7 in/lbs torque. Ensure the replacement switch operates properly. If the switch does not operate properly, reduce the amount of torque on the switch.

4. Assemble in reverse order.

CAUTION:
Do not over-tighten the footboard control panel switch retaining nut during installation of the nurse control panel switch. Over-tightening the nut will cause the switch to not operate properly.

4.27 Electronics Pan Assembly

Tools required: T25 torx head screwdriver
Small wire cutters

Removal

When the electronics pan assembly is lowered, many of the mechanical and electrical components of the bed can be easily accessed.

1. Raise the bed to the high position using the hilow function.

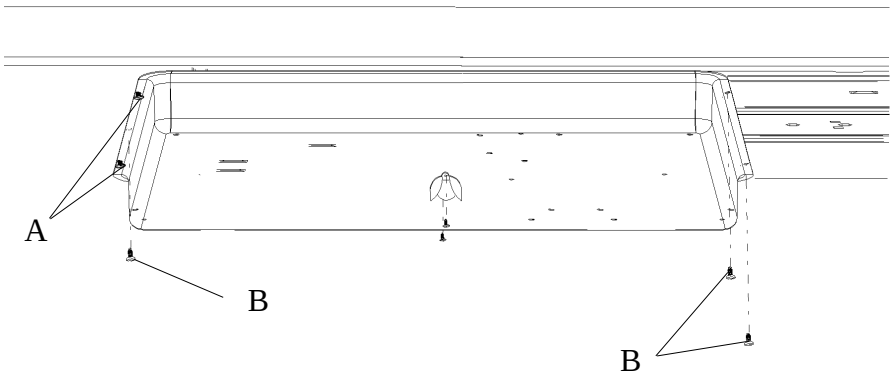
SHOCK HAZARD:

Unplug the bed from its power source. Failure to do so could result in personal injury or equipment damage.

2. Unplug the bed from its power source.

3. Working from the left hand side of the bed, loosen the two screws (A) 1/4" to 1/2" (see figure 4-35 on page 4-68).

Figure 4-35. Removing/Installing the Electronics Pan Assembly

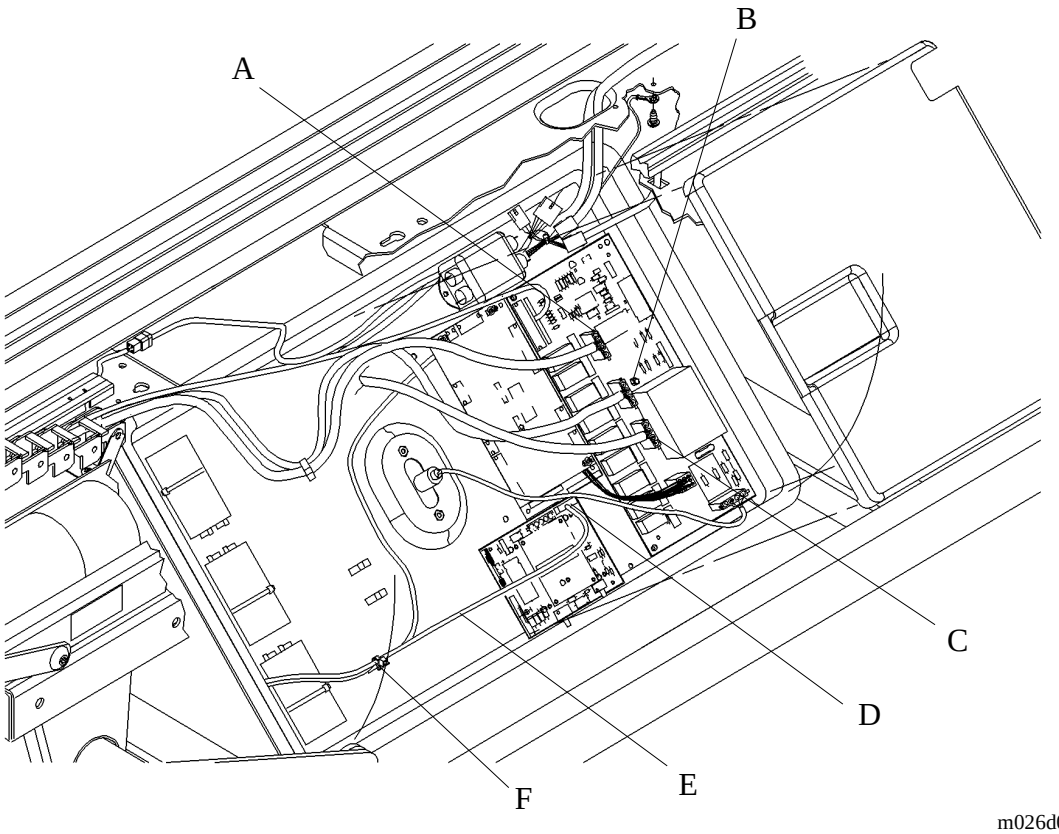


4. Remove the three screws (B).

5. Slide the assembly toward the head of the bed until the electronics pan assembly is free of the two screws (A) and carefully lower.

NOTE:
If this assembly has never been removed, the assembly can be lowered approximately three inches. Using a small wire cutter, remove the wire tie (C) (see figure 4-36 on page 4-69). (This wire tie was required for production plant assembly and does not need to be replaced.)

Figure 4-36. Cable Routings In Electronics Pan Assembly



6. Lower the assembly using care not to pull on any cables.

7. Disconnect the night light sensor cable connector (D) before allowing the assembly to hang unsupported beneath the bed.

8. Perform the necessary service/maintenance to the bed.

Replacement

Assemble in reverse order.

4.28 High Voltage Control Board

Tools required: T25 torx head screwdriver
3/8" nut driver
Needle nose pliers

Removal

1. Raise the bed to the high position using the hilow function.

SHOCK HAZARD:

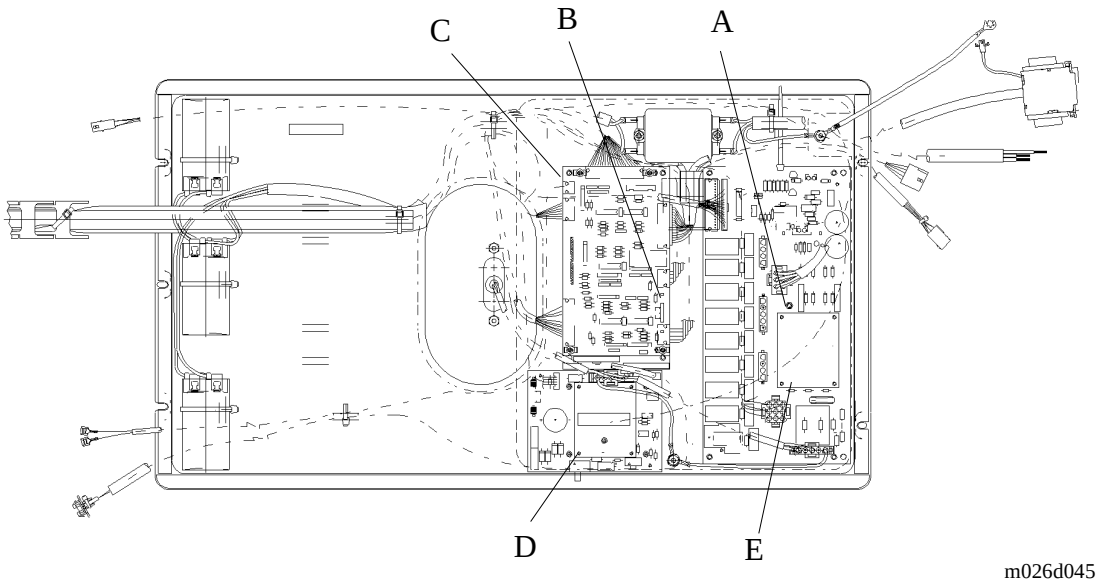
Unplug the bed from its power source. Failure to do so could result in personal injury or equipment damage.

2. Unplug the bed from its power source.

3. Remove the electronics pan assembly. See “Electronics Pan Assembly” on page 4-68.

4. Note the routing of the cable assemblies to the high voltage control board (B) (see figure 4-37 on page 4-70).

Figure 4-37. High Voltage Control Board Location



5. Remove all the cable connectors from the high voltage control board (B).

6. Remove the hex nut (A) from the screw near the center of the high voltage control board.

7. Compress the tab of the four standoffs and lift the high voltage control board (B) up.

Replacement

Assemble in reverse order.

4.29 Logic Control Board

Tools required: T25 torx head screwdriver
3/8" nut driver
Needle nose pliers

Removal

1. Raise the bed to the high position using the hilow function.

SHOCK HAZARD:

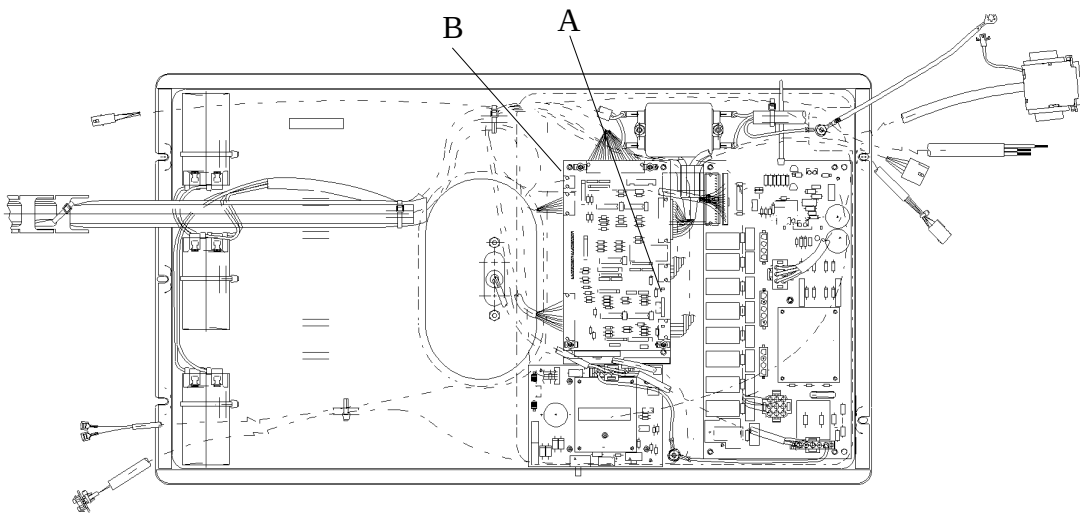
Unplug the bed from its power source. Failure to do so could result in personal injury or equipment damage.

2. Unplug the bed from its power source.

3. Remove the electronics pan assembly. See “Electronics Pan Assembly” on page 4-68.

4. Note the routing of the cable assemblies to the logic control board (B) (see figure 4-38 on page 4-72).

Figure 4-38. Logic Control Board Location



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5. Remove all the cable connectors from the logic control board (B).

6. Remove the hex nut (A) from the screw near the center of the logic control board (B).

7. Compress the tab of the four standoffs and lift the logic control board(B) up.

Replacement

Assemble in reverse order.

4.30 Night Light Control Board

Tools required: T25 torx head screwdriver
Needle nose pliers

Removal

1. Raise the bed to the high position using the hilow function.

SHOCK HAZARD:

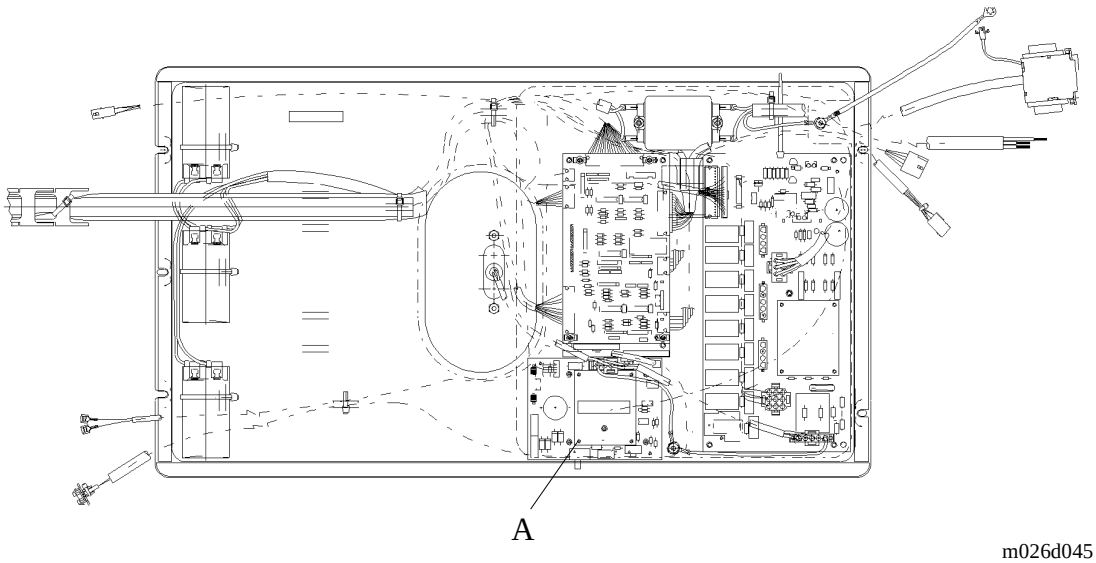
Unplug the bed from its power source. Failure to do so could result in personal injury or equipment damage.

2. Unplug the bed from its power source.

3. Remove the electronics pan assembly. See “Electronics Pan Assembly” on page 4-68.

4. Note the routing of the cable assemblies to the night light control board (A) (see figure 4-39 on page 4-74).

Figure 4-39. Night Light Control Board Location



5. Remove all the cable connectors from the night light control board (A).

6. Compress the tab of the two standoffs away from the switches and then the remaining two standoffs.

7. Lift the night light control board (A) up.

Replacement

Assemble in reverse order.

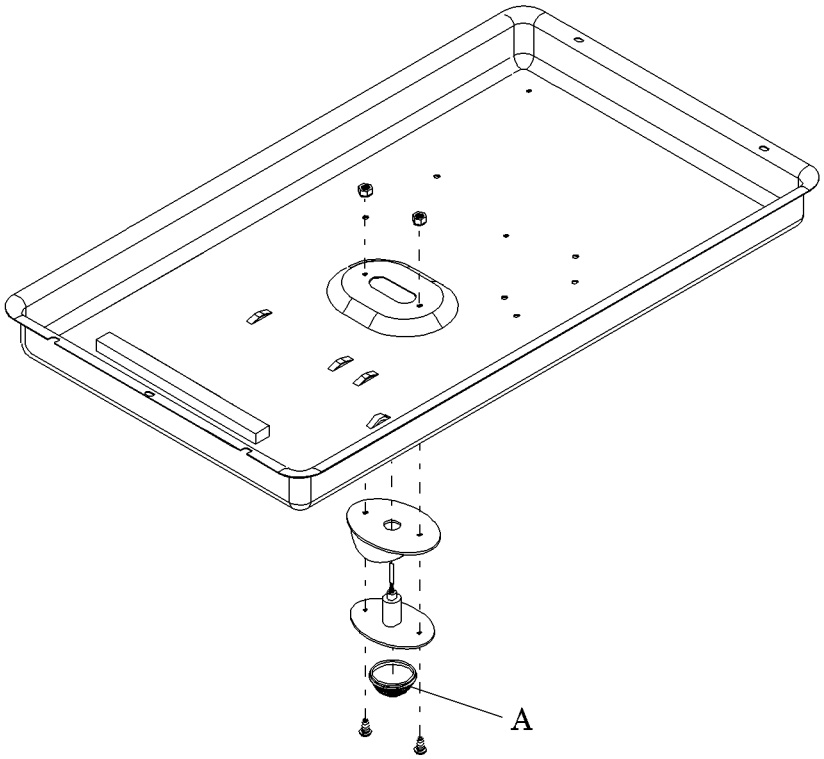
4.31 Night Light Bulb

Tools required: None

Removal

1. Raise the bed to the high position using the hilow function.
2. Unscrew the night light bulb cover (A) to gain access to the night light bulb (see figure 4-40 on page 4-76).

Figure 4-40. Removing/Installing Night Light Bulb



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3. Push the night light bulb up, and turn to the left to remove it.

Replacement

Assemble in reverse order.

4.32 Ribbon Carrier and Cable Assembly

Tools required: T25 torx head screwdriver

Removal

Replace the ribbon carrier and cable assembly as a complete unit.

1. Raise the knee section to its high point.

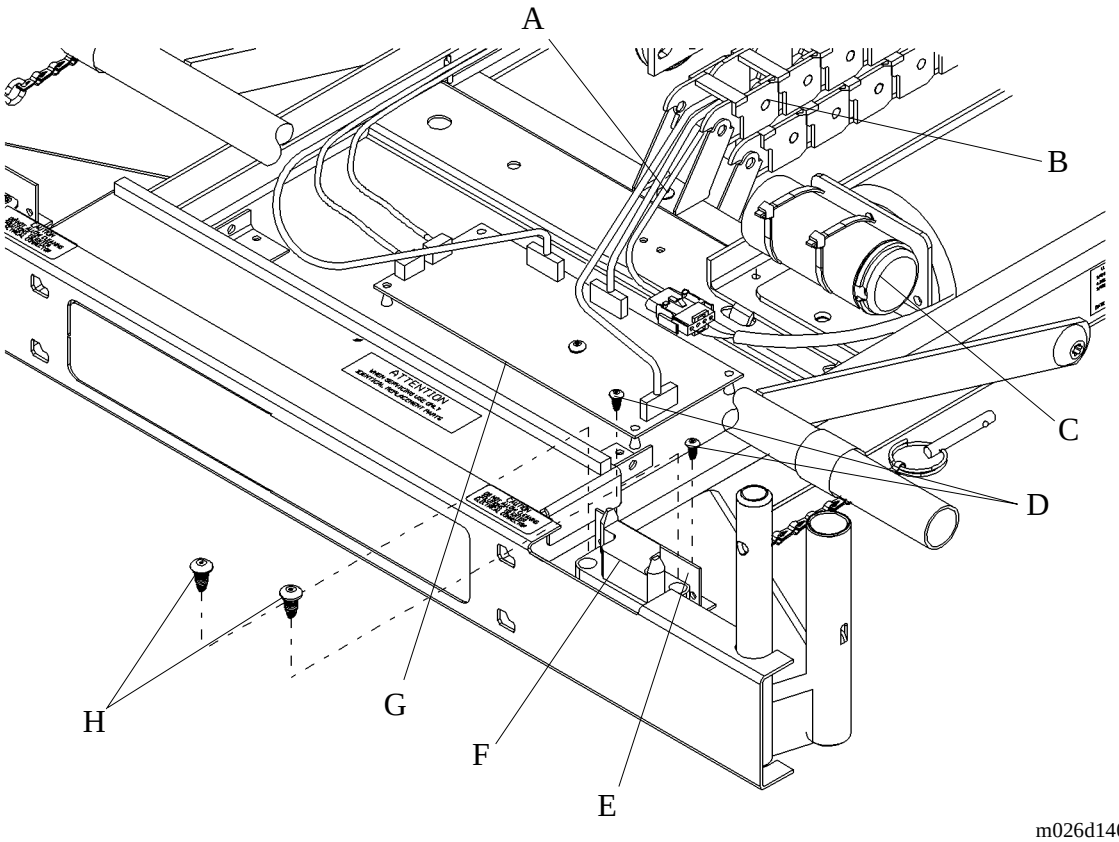
SHOCK HAZARD:

Unplug the bed from its power source. Failure to do so could result in personal injury or equipment damage.

2. Unplug the bed from its power source.

3. Remove the two screws (D) from the left foot end of the retracting frame (see figure 4-41 on page 4-77).

Figure 4-41. Ribbon Carrier and Cable Assembly Replacement



4. Remove the connector cover (E) from the left foot end of the retracting frame.

5. Remove the two shoulder screws (H) and cable connector (F) from the foot end channel.

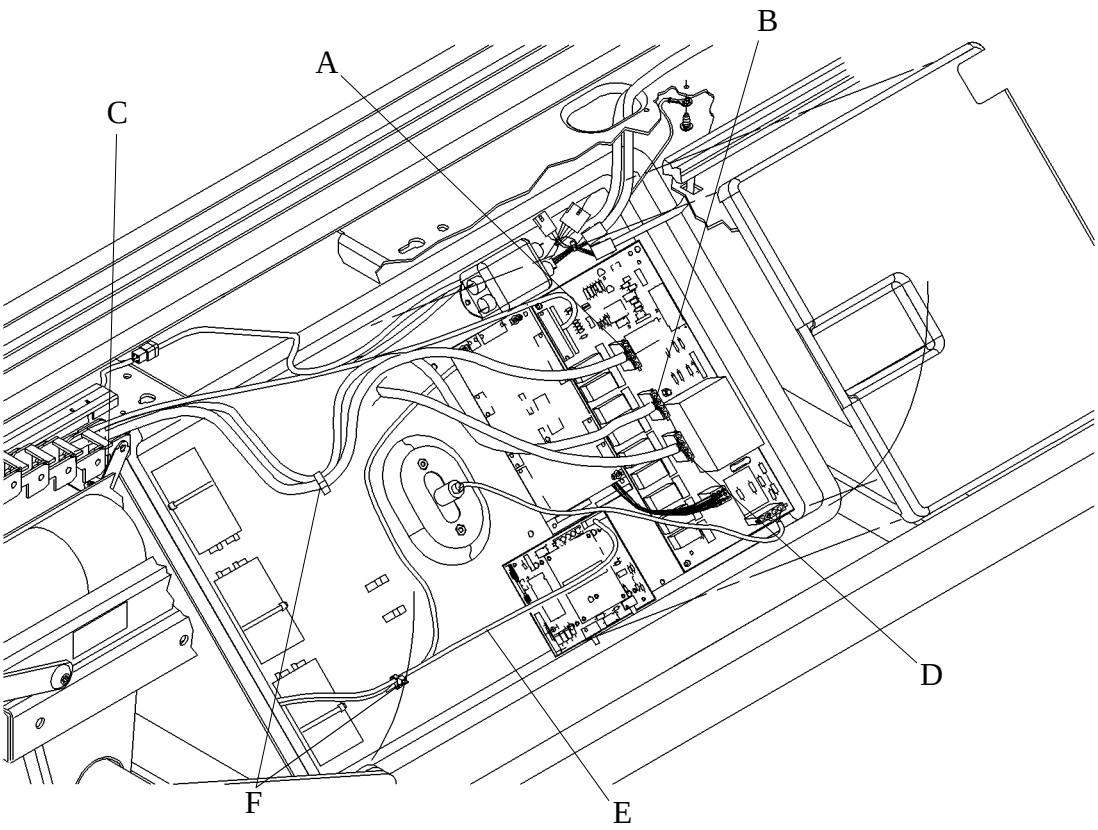
6. Disconnect all the cable connectors from the ribbon carrier and cable assembly (B) to the air system P.C. board (G) and the knee motor (C).

7. Remove the screw connecting the ground cable to the left foot end of the bed frame.

8. Remove the foot end screw (A) connecting the ribbon carrier and cable assembly (B) to the bed frame.

9. Lift the ribbon carrier and cable assembly, and remove screw (C) located toward the head end (see figure 4-42 on page 4-78).

Figure 4-42. Cable Routing Through Ribbon Carrier to the Electronics Pan



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10. Lower the electronics pan assembly. See “Electronics Pan Assembly” on page 4-68.

11. Cut and remove two cable ties (F) fastening the cables to the electronics pan (see figure 4-42 on page 4-78).

12. Disconnect the hilow foot cable connector (A), head power cable (B), hilow head cable(C), and the night light sensor cable (D) from the ribbon carrier and cable assembly.

13. Remove the ribbon carrier and cable assembly from the bed.

Replacement

Assemble in reverse order.

4.33 Head Motor

Tools required: T25 torx head screwdriver

Removal

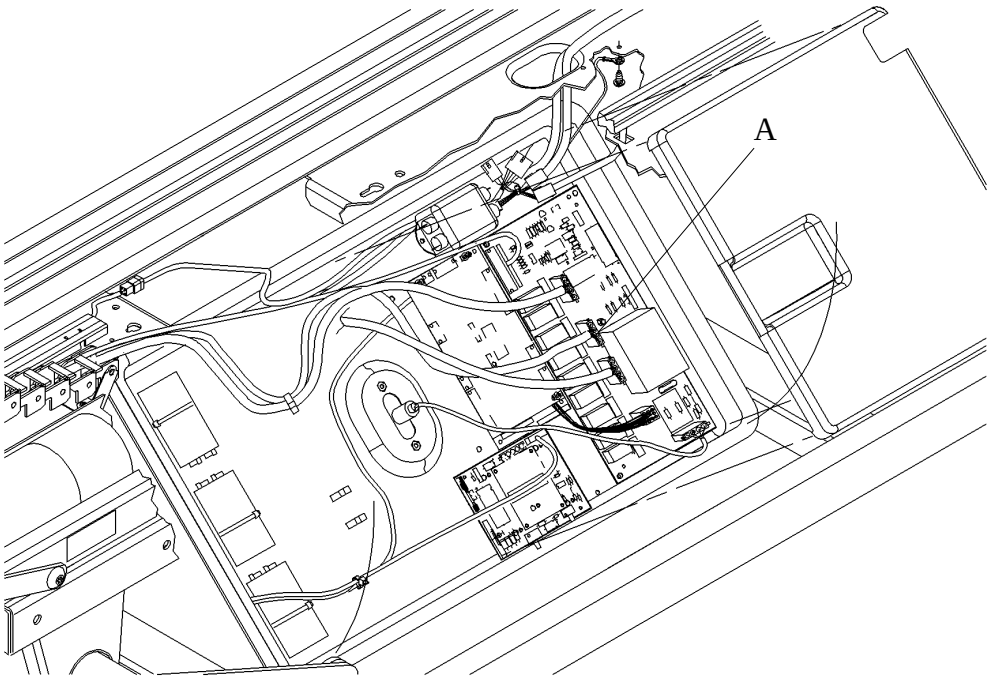
1. Raise the bed to the high position using the hilow function.
2. Raise the knee section to the high position using the knee function.

SHOCK HAZARD:

Unplug the bed from its power source. Failure to do so could result in personal injury or equipment damage.

3. Unplug the bed from its power source.
4. Remove foot end cover. See “Cover—Foot End” on page 4-13.
5. Lower the electronics pan assembly. See “Electronics Pan Assembly” on page 4-68.
6. Disconnect the head power cable (A) (see figure 4-43 on page 4-80).

Figure 4-43. Head Motor Cable Connection at the Electronics Pan Assembly



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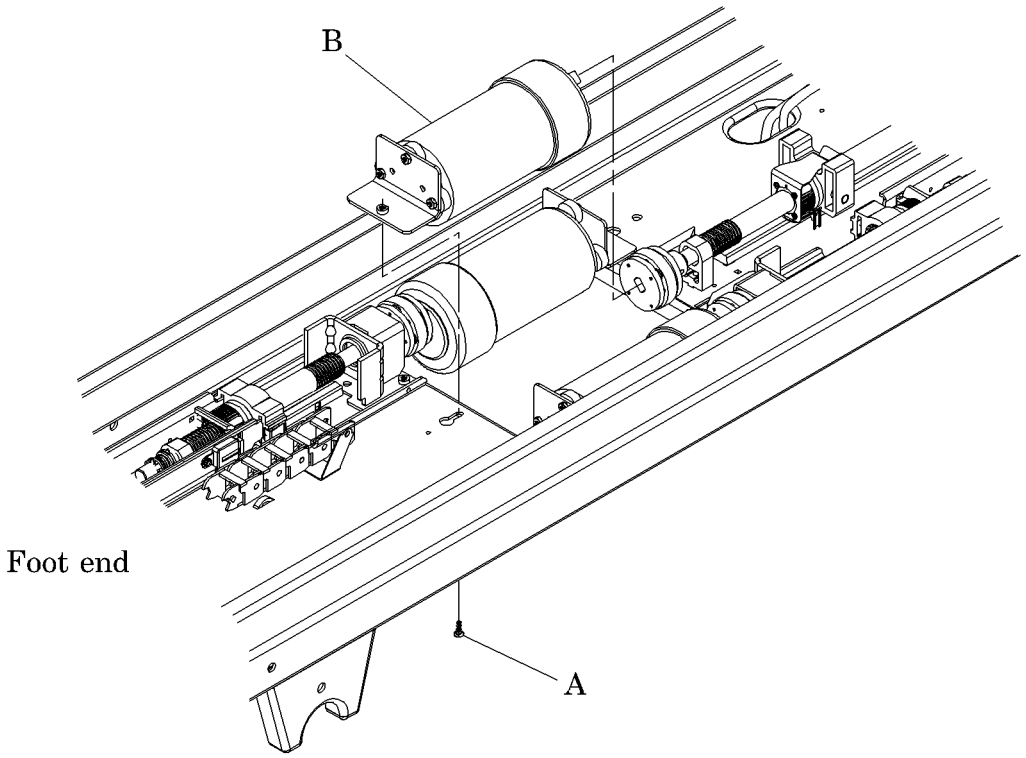
7. Loosen one screw (A) approximately 1/8" (see figure 4-44 on page 4-81).

Figure 4-44. Removing/Installing Head Motor



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8. Carefully support the head motor assembly (B) with your hands. Slide the motor assembly toward the foot end of the bed until the shaft disengages from the drive screw coupling and screw (A) reaches the open end of the key hole slot.

9. Lift the head motor assembly (B) out of the bed.

Replacement

Assemble in reverse order.

4.34 Hilow Head Motor

Tools required: T25 torx head screwdriver

Removal

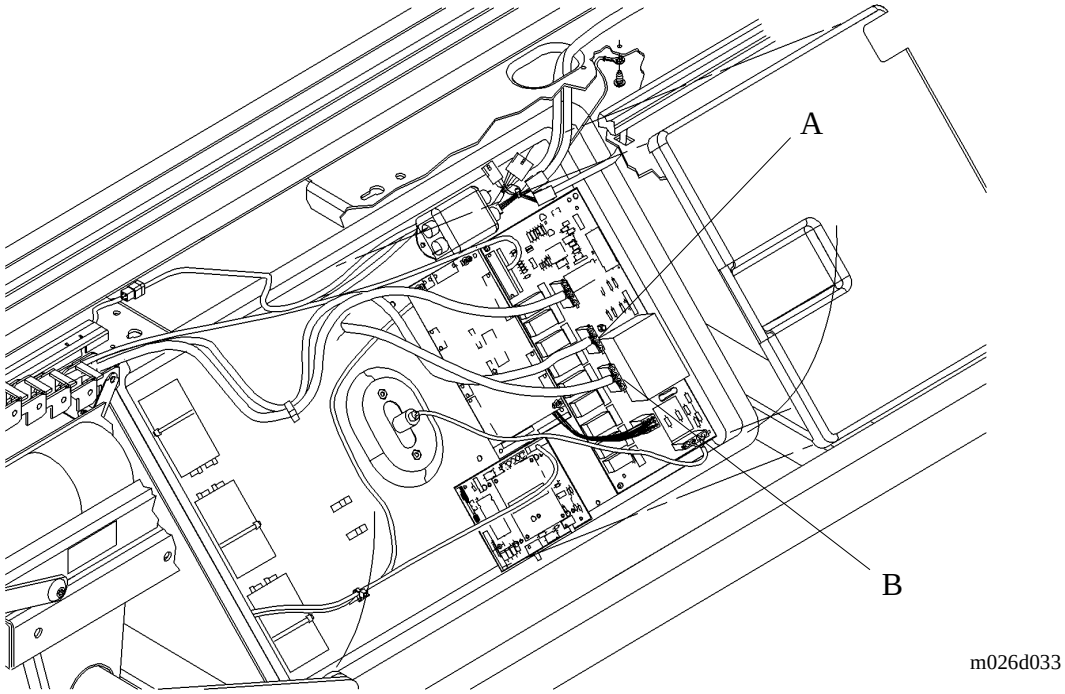
1. Raise the bed to the high position using the hilow function.

SHOCK HAZARD:

Unplug the bed from its power source. Failure to do so could result in personal injury or equipment damage.

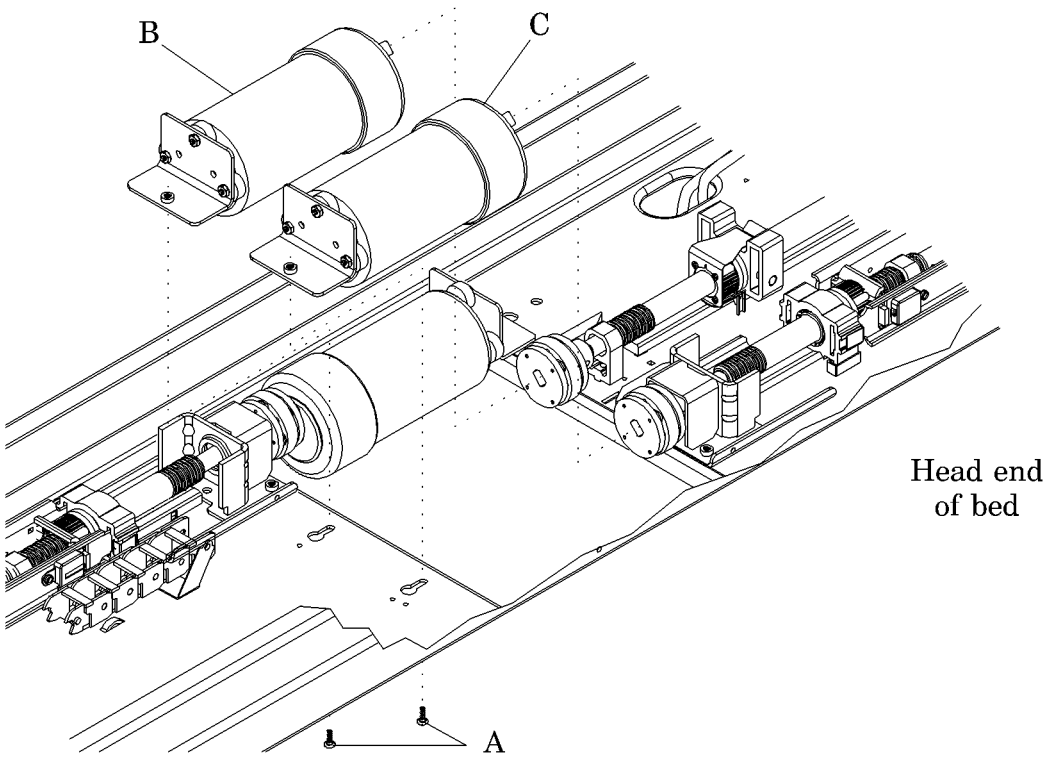
2. Unplug the bed from its power source.
3. Remove foot end cover. See “Cover—Foot End” on page 4-13.
4. Lower the electronics pan assembly. See “Electronics Pan Assembly” on page 4-68.
5. Disconnect the head (A) and hilow head (B) power cables (see figure 4-45 on page 4-82).

Figure 4-45. Head Motor and Hilow Head Motor Cable Connections



6. Loosen one screw (A) on both motor assemblies approximately 1/8" (see figure 4-46 on page 4-83).

Figure 4-46. Removing/Installing the Hilow Head Motor



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7. From the top side of bed, carefully support the head motor assembly (B) with your hands. Slide the head motor assembly (B) toward the foot end of the bed until the shaft disengages from the coupling and screw (A) reaches the open end of the slot.

8. Lift the head motor assembly (A) out of the bed.

9. Repeat step 7 to carefully remove the hilow head motor assembly (C).

Replacement

Assemble in reverse order.

4.35 Hilow Foot Motor

Tools required: T25 torx head screwdriver

Removal

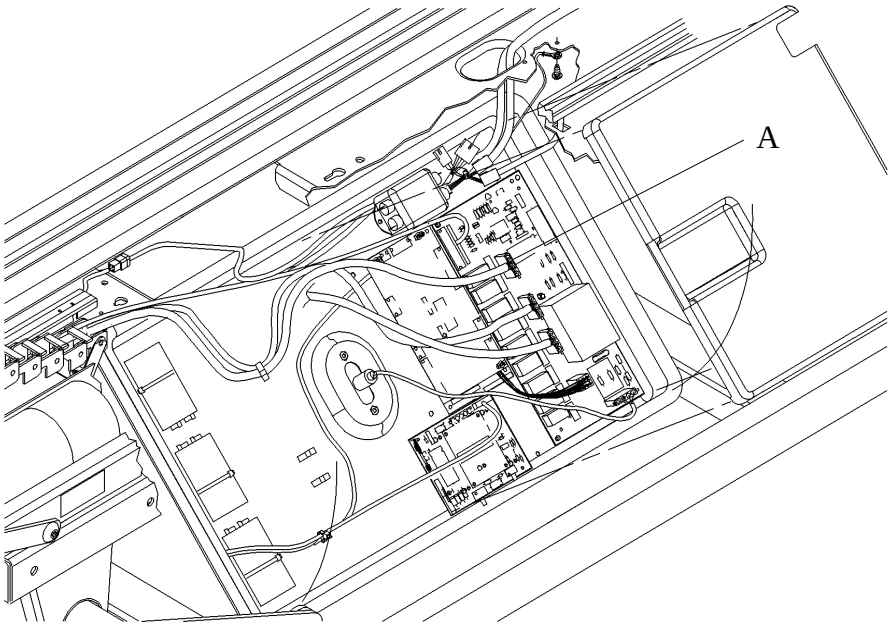
1. Raise the bed to the high position using the hilow function.

SHOCK HAZARD:

Unplug the bed from its power source. Failure to do so could result in personal injury or equipment damage.

2. Unplug the bed from its power source.
3. Remove foot end cover. See “Cover—Foot End” on page 4-13.
4. Lower the electronics pan assembly. See “Electronics Pan Assembly” on page 4-68.
5. Disconnect the hilow foot power cable (A) (see figure 4-47 on page 4-84).

Figure 4-47. Hilow Foot Motor Cable Connection



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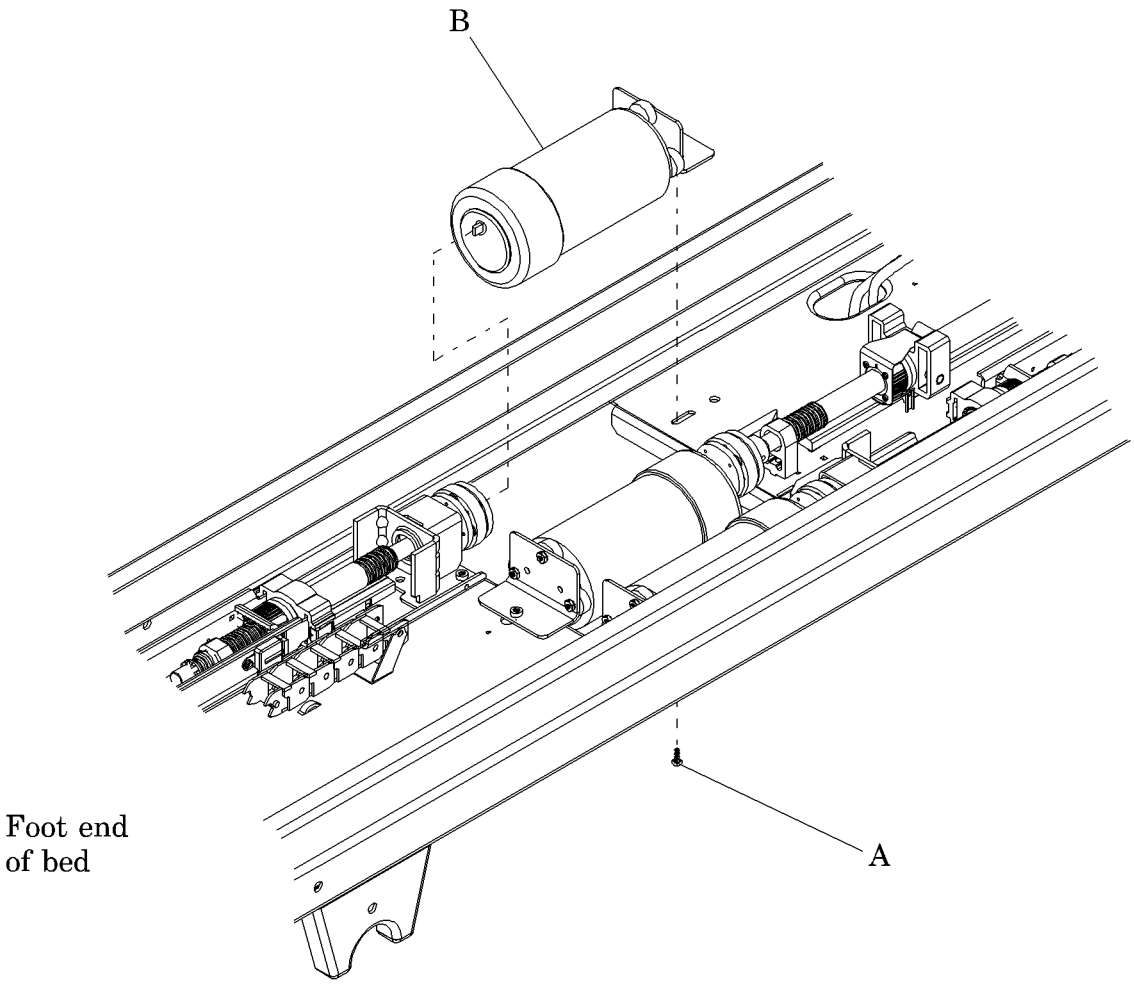
6. Remove one screw (A) securing the hilow foot motor (see figure 4-48 on page 4-85).

Figure 4-48. Removing/Installing Hilow Foot Motor



7. From the top side of the bed, carefully support the hilow foot motor assembly (B) with your hands. Slide the hilow foot motor assembly (B) toward the head end of the bed until the shaft disengages from the coupling and screw (A) reaches the open end of the slot.

8. Lift the hilow foot motor assembly (B) out of the bed.

Replacement

Assemble in reverse order.

4.36 Knee Motor

Tools required: T25 torx head screwdriver

Removal

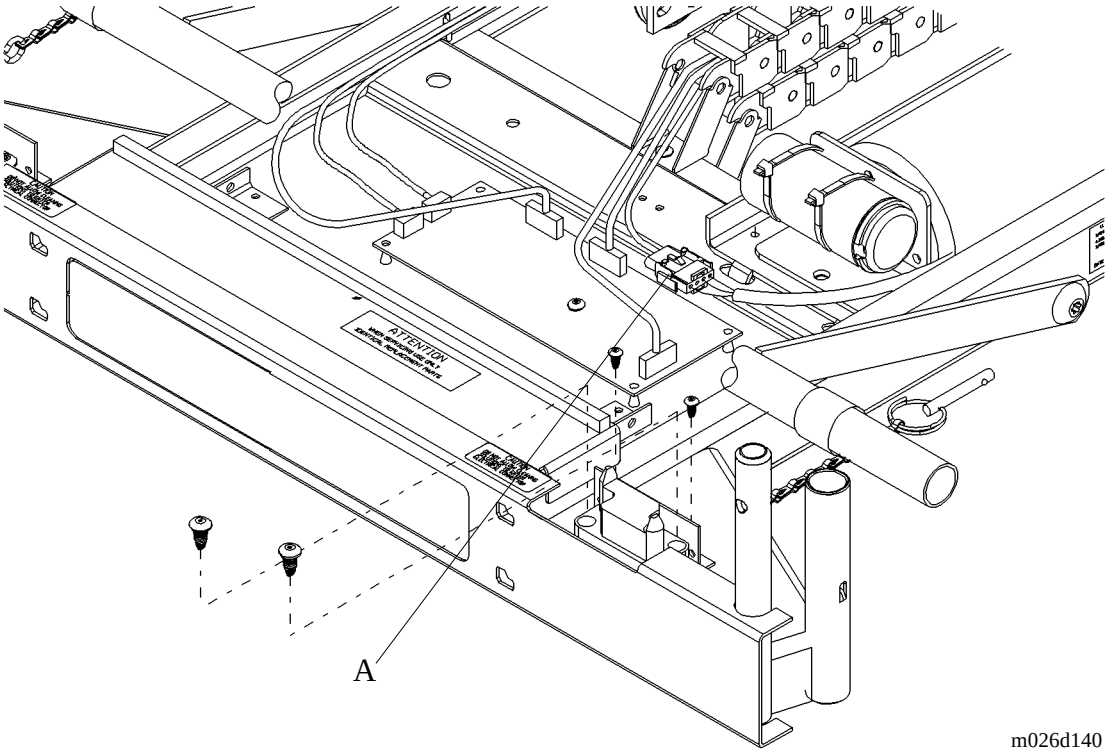
1. Raise the bed to the high position using the hilow function.
2. Raise the knee section to the high position using the knee function.
3. Lower the head section.

SHOCK HAZARD:

Unplug the bed from its power source. Failure to do so could result in personal injury or equipment damage.

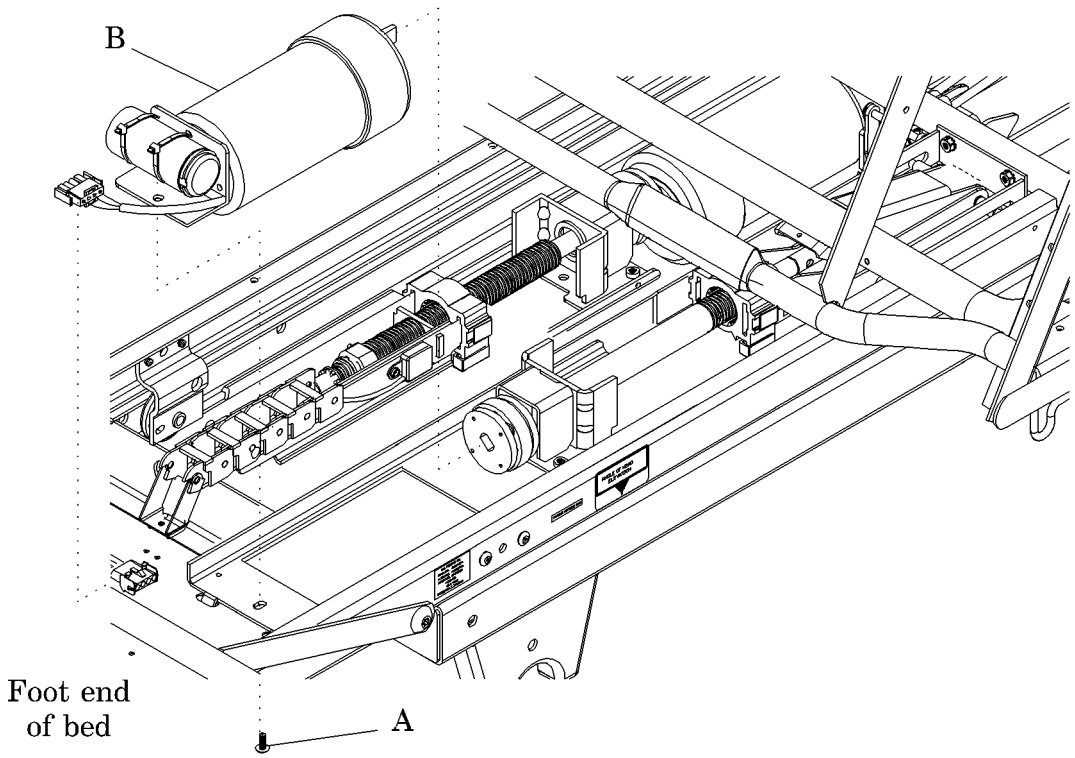
4. Unplug the bed from its power source.
5. Remove foot end cover. See “Cover—Foot End” on page 4-13.
6. Disconnect the knee motor power cable (A) (see figure 4-49 on page 4-86).

Figure 4-49. Knee Motor Power Cable Connection



7. Remove one screw (A) securing the knee motor (B) (see figure 4-50 on page 4-87).

Figure 4-50. Removing/Installing the Knee Motor



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8. Carefully support the motor assembly (B) with your hands. Slide the knee motor assembly toward the foot end of the bed until the shaft disengages from the coupling.

9. Lift the motor assembly (B) out of the bed.

Replacement

Assemble in reverse order.

4.37 Head Screw Assembly

Tools required: T25 torx head screwdriver

Removal

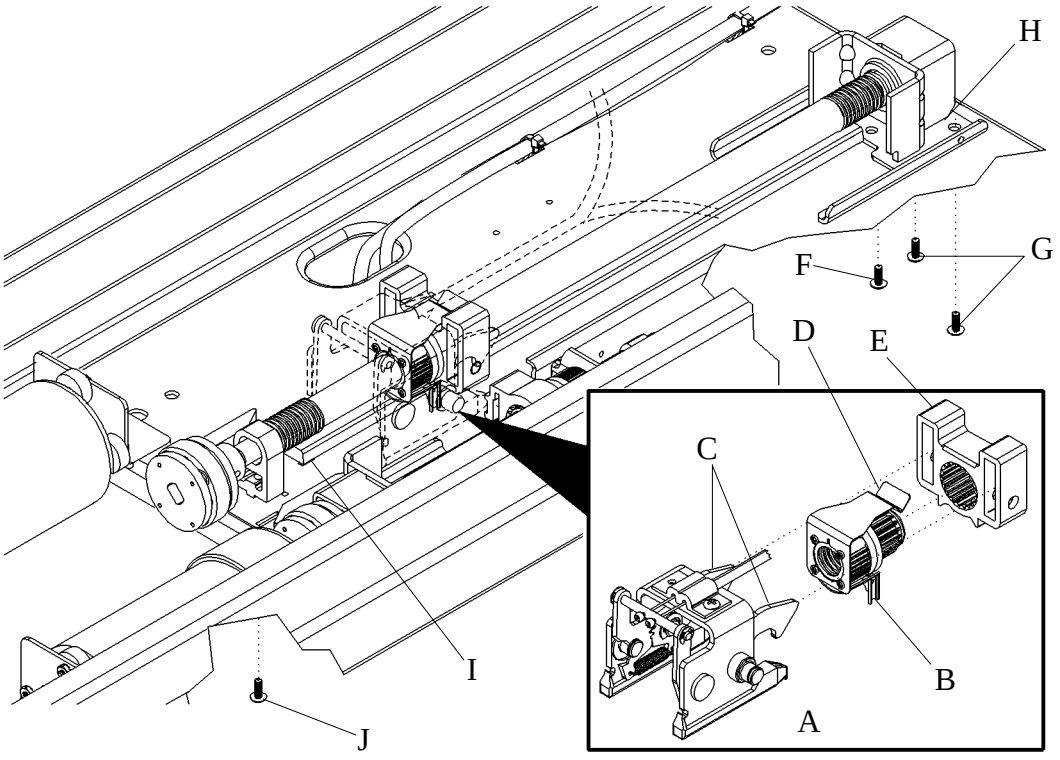
1. Remove the head motor assembly from the bed. See “Head Motor” on page 4-80.

SHOCK HAZARD:

Unplug the bed from its power source. Failure to do so could result in personal injury or equipment damage.

2. Remove two screws (G) from the head drive screw assembly (see figure 4-51 on page 4-88).

Figure 4-51. Removing/Installing the Head Screw Assembly



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3. Loosen screws (F and J) approximately 1/8".

4. Lift the two CPR latches (C) and the CPR clip (D) to allow the head torque cage (E) to slide forward toward the head end of the bed. Slide the head screw bracket (H) toward the head of the bed until the screw (F) can be lifted from the key hole slot.

5. Slide the drive screw assembly toward the foot of the bed until screw (J) can be lifted from the key hole slot.

6. Lift the CPR latch assembly (A) to allow the head drive screw assembly to be removed from the bed. Remove the head drive screw assembly.

Replacement

1. Replace or make the necessary repairs to the drive screw assembly.

2. Assemble in reverse order.

CAUTION:
Align the switch slide and the head limit switch after servicing the head screw assembly. Ensure that the CPR latch assembly properly actuates the limit switch. Damage to the bed can occur.

3. Be certain to align the switch slide (B) with the head limit switch package (I).

4. Ensure that the CPR latch assembly (A) properly actuates limit switch (I).

4.38 Hilow Head Screw Assembly

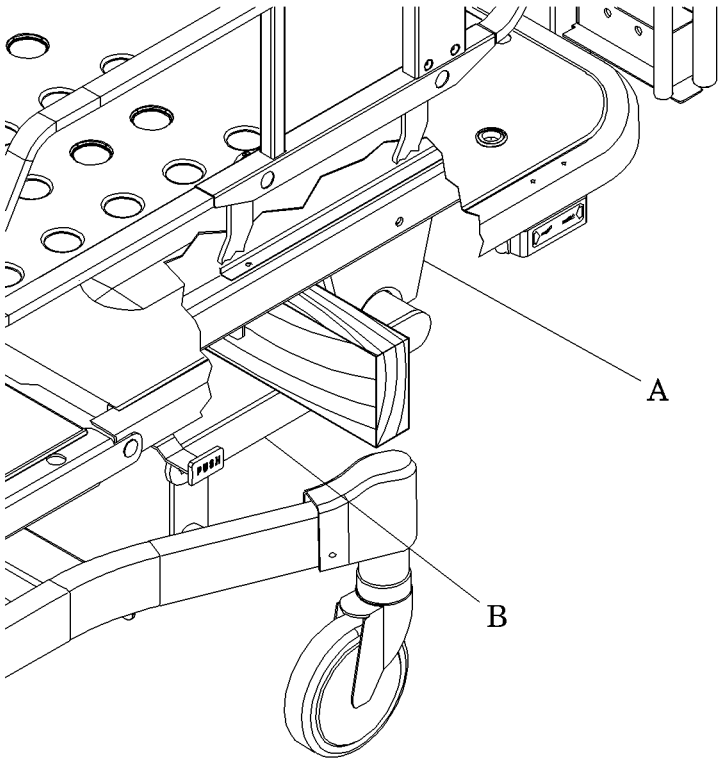
Tools required: T25 torx head screwdriver
2" x 4" x 30" lumber

Removal

WARNING:
Use a 2 x 4 to support the head end of the bed when removing or adjusting the hilow head screw assembly. The head end of the bed will fall during this procedure if it is not supported. Personal injury or equipment damage can result.

1. Place a wooden 2 x 4 between the intermediate frame (A)and the head lift arm assembly (B) (see figure 4-52 on page 4-90).

Figure 4-52. Using Wood Blocking to Support the Head End of the Bed



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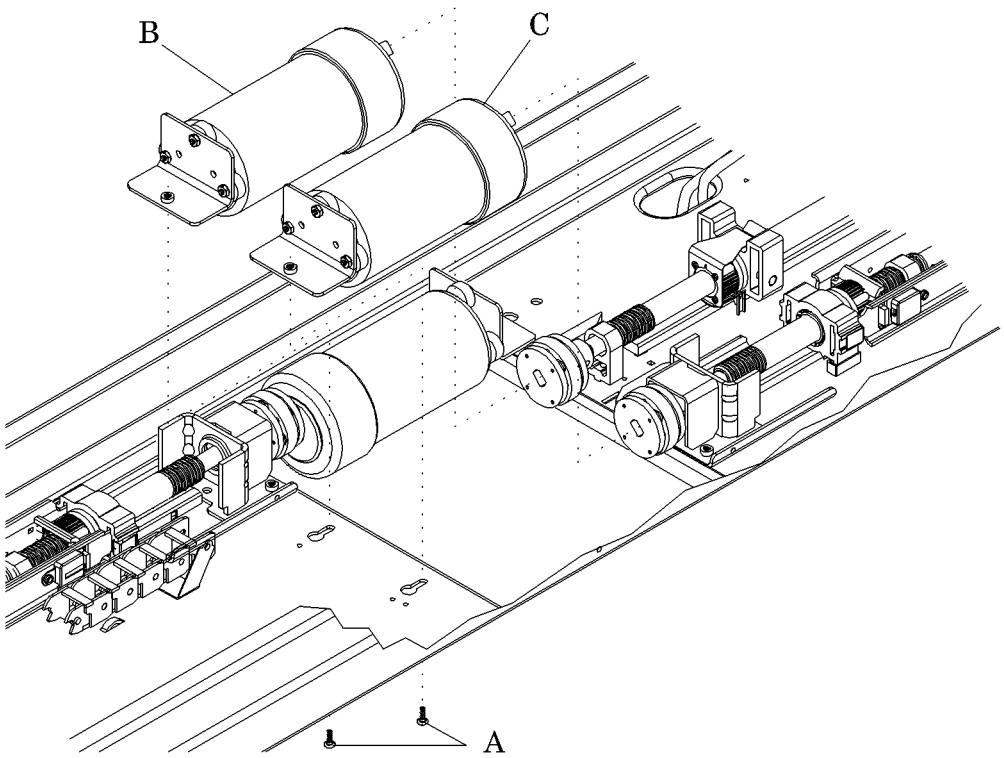
WARNING:
On “E” and “F” version beds, fine adjustment is required when transferring the load from the drive screw to the wood blocking. If the “E” or “F” version bed is “unloaded” too far, the hilow remote switch will trip and the bed will automatically rise for three seconds. When the intermediate frame nears the wood blocking on these version beds, just “bump” the hilow down switch until contact is made and the head end of the bed is supported. Personal injury or equipment damage can result.

2. Lower the hilow onto the 2 x 4 to support the head end of the bed.

3. Raise the knee section to the high position using the knee up function.

4. Remove head motor assembly (A) (refer to procedure 4.33) and the head hilow motor assembly (B) (refer to procedure 4.34). See figure 4-53 on page 4-91.

Figure 4-53. Removing/Installing Head Motor and Hilow Head Motor



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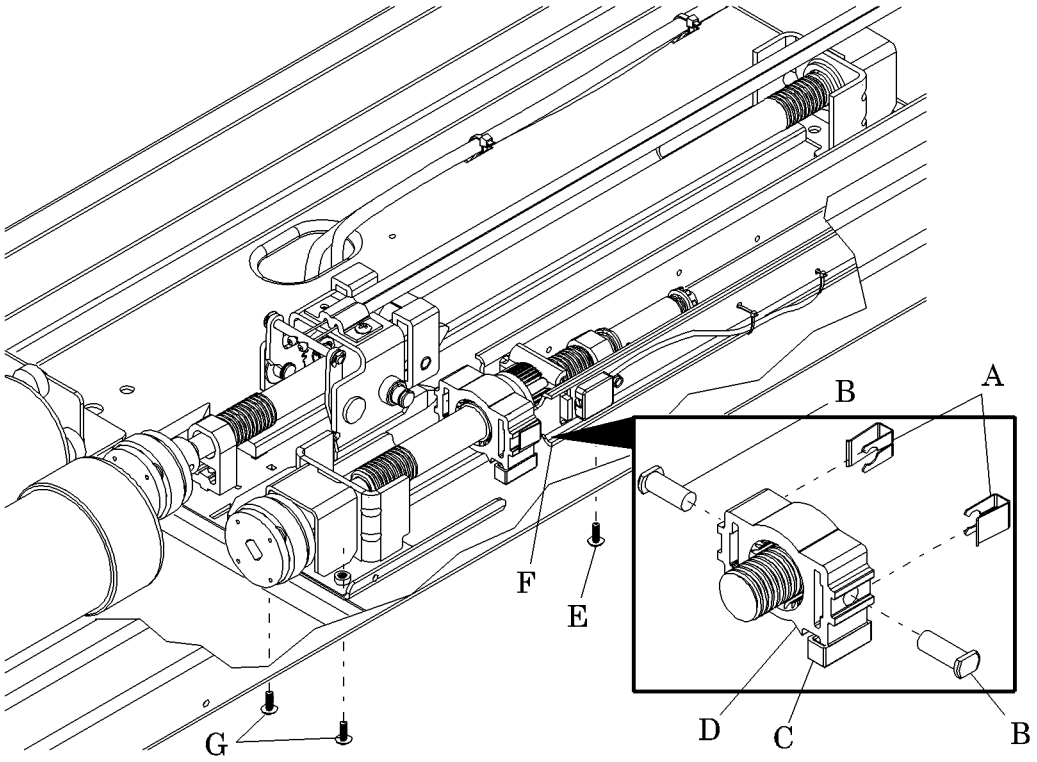
5. Remove the two clips (A) and pins (B) (see figure 4-54 on page 4-92).

Figure 4-54. Removing/Installing the Hilow Head Screw Assembly



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6. Use a standard screwdriver if necessary to remove the hilow straps from the torque cage (D).
7. Remove two screws (G) from the hilow head drive screw assembly.
8. Loosen screw (E) approximately 1/8".
9. Slide the drive screw assembly toward the foot of the bed until screw (E) can be lifted from the key hole slot.
10. Remove the hilow head drive screw assembly.

Replacement

1. Replace or make the necessary repairs to the assembly.

2. Assemble in reverse order.

CAUTION:
Failure to align the switch slide and the drive boots when installing the hilow head drive screw can cause severe damage to the bed.

3. Align the switch slide (F) and the drive boots (C) which are fastened to the torque cage (D).

4.39 Head Limit Switch

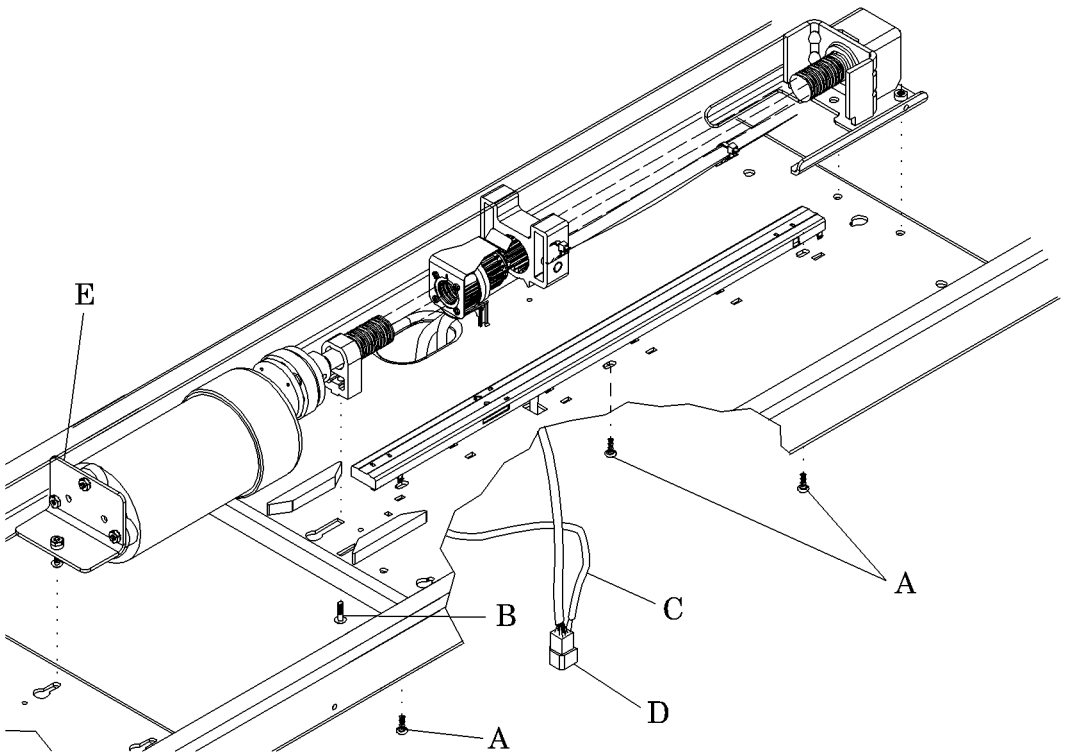
Tools required: T25 torx head screwdriver
Extraction tool (P/N 428356)
2" x 4" x 30" lumber

Removal

1. Remove the head motor assembly. See “Head Motor” on page 4-80.

2. Remove the three screws (A) from the head limit switch housing (see figure 4-55 on page 4-94).

Figure 4-55. Preparing to Remove/Install the Head Limit Switch



3. Remove screw (B) from the radial bracket.

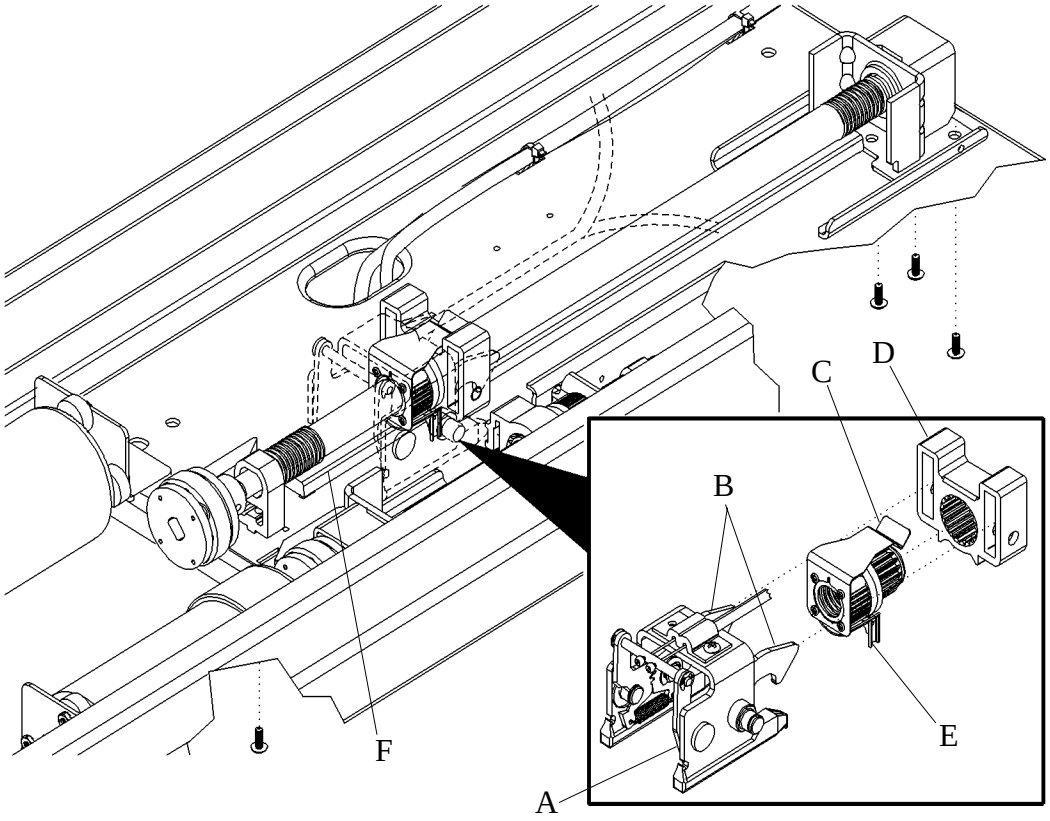
4. Disconnect the limit switch cable connector (D).

5. Locate and mark the two wires (C) coming from the CPR switch to the limit switch cable connector (D).

6. Use the extraction tool to remove the two wires (C) coming from the CPR switch from the limit switch cable connector (D).

7. Lift the two CPR latches (B) and the CPR clip (C) to allow the head torque cage (D) to slide forward toward the head of the bed (see figure 4-56 on page 4-95).

Figure 4-56. CPR Clip and Latch Location



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WARNING:
Use a 2 x 4 to support the head end of the bed when removing or adjusting the head limit switch assembly. The head end of the bed will fall during this procedure if it is not supported. Personal injury or equipment damage can result.

8. Raise the head section and prop it up in the high position with a 2 x 4.

9. Lift the CPR latch housing assembly and head screw assembly. Slide the limit switch assembly out.

Replacement

1. Install the new limit switch assembly.

2. Snap the head limit housing into position and then push it as far toward the foot end of the bed as possible.

CAUTION:
Do not over-tighten the mounting screws. Over-tightening the mounting screws can cause the limit switches to operate improperly.

3. Assemble the switch to the bed in reverse order of the removal procedure.

CAUTION:
Align the switch slide and the head limit switch after installing the limit switch package. Ensure that the CPR latch assembly properly actuates the limit switch. Damage to the bed can occur.

4. Be certain to align the switch slide (E) with the head limit switch package (F).

5. Ensure that the CPR latch assembly (B) properly actuates limit switch (F).

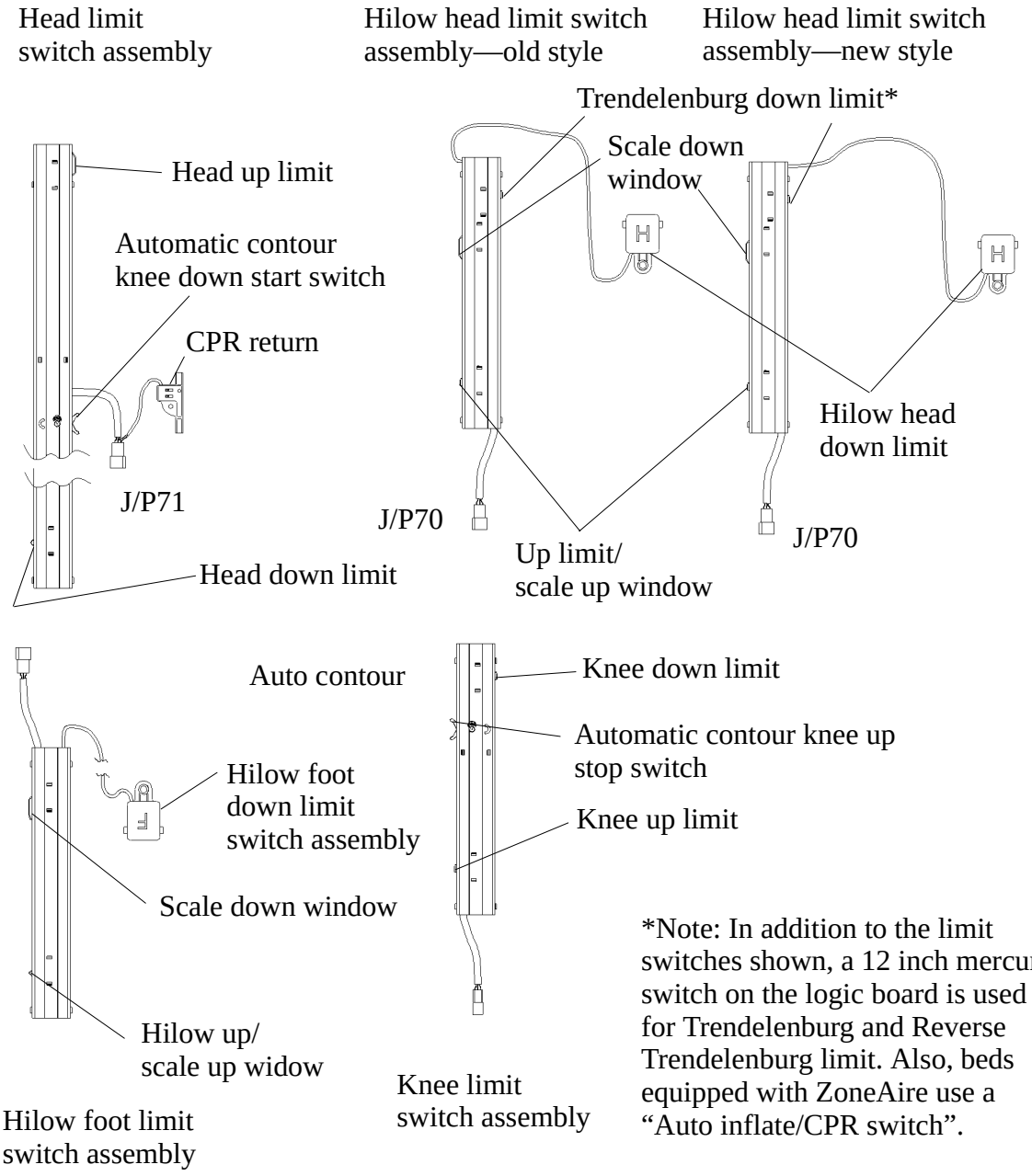
6. Adjust the head limit switch (see “Adjustment” on page 4-97).

7. Assemble the remaining parts in reverse order.

Adjustment

1. Determine which limit switch package you are working with by comparing it to figure 4-57 on page 4-97.

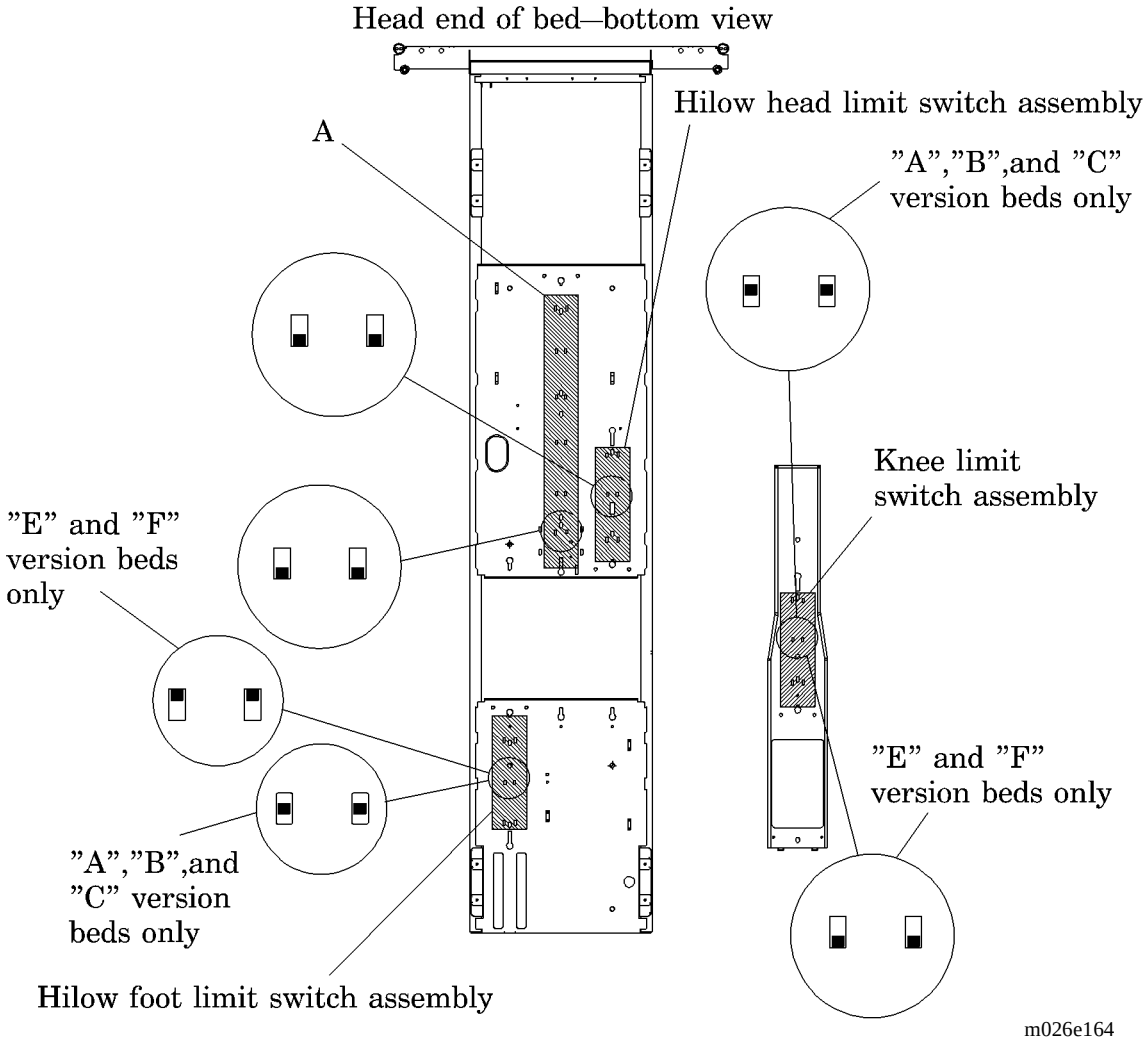
Figure 4-57. Limit Switch Configurations*


Head limit switch assembly
Hilow head limit switch assembly—old style
Hilow head limit switch assembly—new style
Trendelenburg down limit*
Scale down window
Head up limit
Automatic contour knee down start switch
CPR return
J/P71
Head down limit
J/P70
Up limit/ scale up window
J/P70
Hilow head down limit
Auto contour
Hilow foot down limit switch assembly
Scale down window
Hilow up/ scale up widow
Hilow foot limit switch assembly
Knee down limit
Automatic contour knee up stop switch
Knee up limit
Knee limit switch assembly
*Note: In addition to the limit switches shown, a 12 inch mercury switch on the logic board is used for Trendelenburg and Reverse Trendelenburg limit. Also, beds equipped with ZoneAire use a "Auto inflate/CPR switch".

m026d163

2. Adjust the limit switch package (A) as far toward the foot end as the tabs can go in the slots as shown in figure 4-58 on page 4-98 (the lower left hand post will be centered in its slot).

Figure 4-58. Head Limit Switch Package Tab and Slot Orientation


Head end of bed—bottom view
Hilow head limit switch assembly
A
"A","B",and "C" version beds only
Knee limit switch assembly
"E" and "F" version beds only
"E" and "F" version beds only
"A","B",and "C" version beds only
Hilow foot limit switch assembly
m026e164

CAUTION:
Do not over-tighten the limit switch mounting screws. Over-tightening the mounting screws can cause the limit switches to operate improperly.

3. Tighten the limit switch mounting screws.

4.40 Hilow Head Limit Switch

Tools required: T25 torx head screwdriver
T25 torx ratchet driver
2" x 4" x 30" lumber

Removal

WARNING:
Use a 2 x 4 to support the head end of the bed when removing or adjusting the hilow head screw assembly. The head end of the bed will fall during this procedure if it is not supported. Personal injury or equipment damage can result.

1. Place a wooden 2 x 4 between the intermediate frame and the head lift arm assembly (see figure 4-52 on page 4-90).

WARNING:
On “E” and “F” version beds, fine adjustment is required when transferring the load from the drive screw to the wood blocking. If the “E” or “F” version bed is “unloaded” too far, the hilow remote switch will trip and the bed will automatically rise for three seconds. When the intermediate frame nears the wood blocking on these version beds, just “bump” the hilow down switch until contact is made and the head end of the bed is supported. Personal injury or equipment damage can result.

2. Lower the hilow onto the 2 x 4 to support the head end of the bed.

3. Raise the head section to 25° elevation.

SHOCK HAZARD:

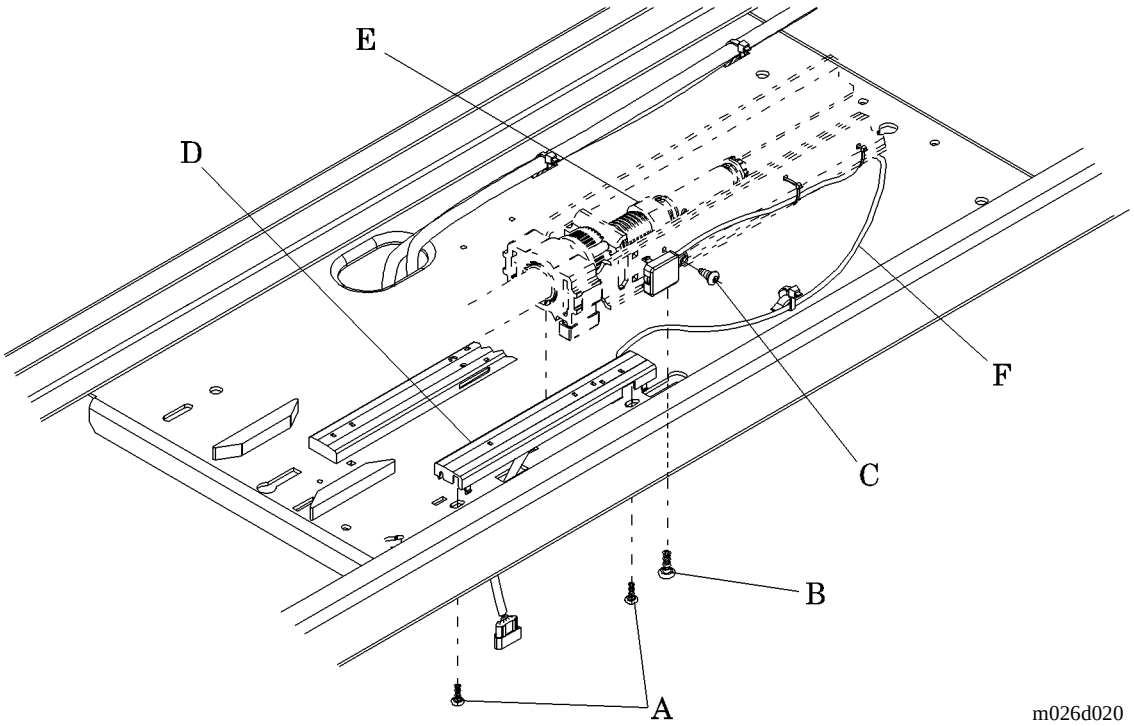
Unplug the bed from its power source. Failure to do so could result in personal injury or equipment damage.

4. Unplug the bed from its power source.

5. Lower the electronics pan assembly. See “Electronics Pan Assembly” on page 4-68.

6. Remove the two screws (A) from the hilow limit switch housing (D) (see figure 4-59 on page 4-100).

Figure 4-59. Removing/Installing the Hilow Head Limit Switch



7. Remove screw (B) from the radial bracket (E).
8. Disconnect the hilow head limit switch cable (F) at the connector.
9. Notice the routing of the cables for limit switch assembly. The cables for the new assembly must be installed in the same manner.
10. Remove the wire ties from the cables.
11. Remove the screw (C) from the limit switch on the lift arm.
12. Lift the radial bracket (E) and the end of the hilow head screw assembly. Slide the hilow head limit switch assembly out.

Replacement

1. Assemble in reverse order.

CAUTION:
Failure to align the switch slide and the drive boots when installing the hilow head limit switch can cause severe damage to the bed.

CAUTION:
Do not over-tighten the limit switch mounting screws. Over-tightening the mounting screws can cause the limit switches to operate improperly.

2. Be sure to align the switch slide and the drive boots which are fastened to the lift nut and torque cage.

NOTE:
On the “E” and “F” version beds, the main limit housing should be installed per figure 4-60 on page 4-102 (the “A”, “B”, and “C” version beds require adjustment).

3. Adjust the hilow head limit switch (see “Adjustment—”A”, “B”, and “C” Version Beds Only” on page 4-102), then complete the assembly of the bed.

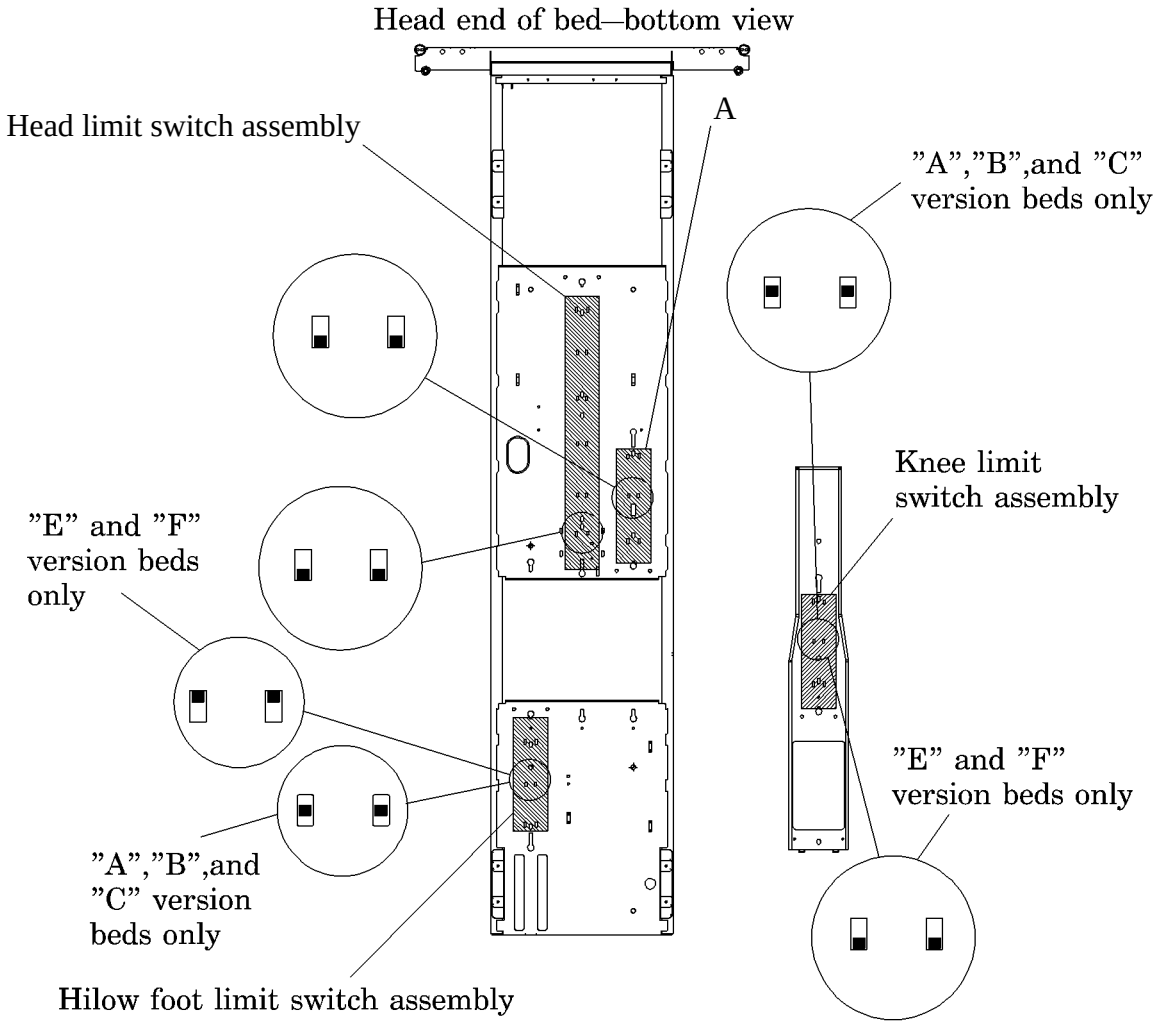
Adjustment—"A", "B", and "C" Version Beds Only

NOTE:
The "E" and "F" version beds do not require adjustment to the hilow head limit switch assembly

1. Determine which limit switch package you are working with by comparing it to figure 4-57 on page 4-97.

2. Adjust the limit switch package (A) as far toward the foot end as the tabs can go in the slots as shown in figure 4-60 on page 4-102.

Figure 4-60. Hilow Head Limit Switch Package Tab and Slot Orientation


Head end of bed—bottom view
A
Head limit switch assembly
"A","B",and "C" version beds only
Knee limit switch assembly
"E" and "F" version beds only
"E" and "F" version beds only
"A","B",and "C" version beds only
Hilow foot limit switch assembly

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CAUTION:
Do not over-tighten the limit switch mounting screws. Over-tightening the mounting screws can cause the limit switches to operate improperly.

3. Tighten the mounting screws.

4.41 Knee Screw Assembly

Tools required: T25 torx head screwdriver
T25 torx ratchet driver
Screwdriver

Removal

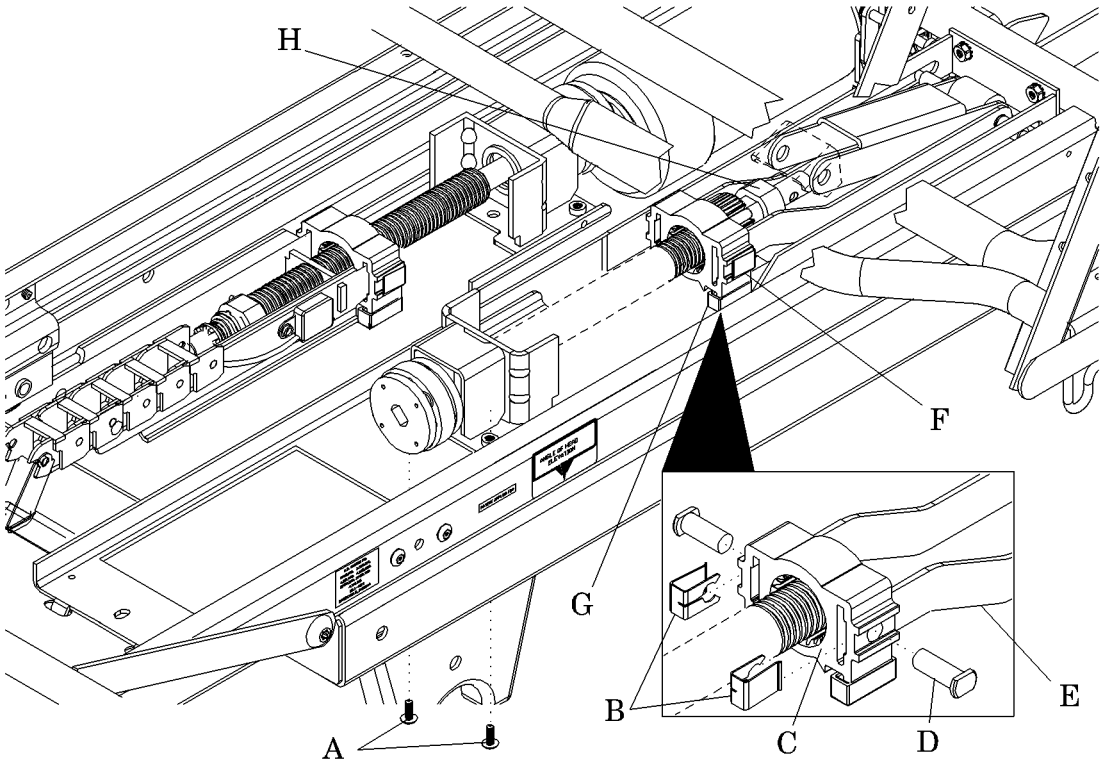
1. Raise the knee section to the middle of its total travel.
2. Raise the bed to the high position using the hilow function.
3. Remove the foot end cover. See “Cover—Foot End” on page 4-13.

SHOCK HAZARD:

Unplug the bed from its power source. Failure to do so could result in personal injury or equipment damage.

4. Unplug the bed from its power source.
5. Remove the electronics pan assembly. See “Electronics Pan Assembly” on page 4-68.
6. Remove the hilow head motor assembly. See “Hilow Head Motor” on page 4-82.
7. Loosen the screw beneath the radial bracket (H) approximately 1/8" (see figure 4-61 on page 4-105).

Figure 4-61. Removing/Installing the Knee Screw Assembly



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8. Remove the two screws (A).
9. Remove the two spring clips (B) and pins (D) from the torque cage (C).
10. Use a standard screwdriver, if necessary, to remove the torque cage from the knee links (E).
11. Slide the knee drive screw assembly toward the head end of the bed until the screw in the radial bracket (H) can be removed from the key hole slot.
12. Remove the assembly.

Replacement

1. Replace or make the necessary repairs to the assembly.

2. Assemble in reverse order.

CAUTION:
Failure to align the limit switch slide, automatic contour switch, and drive boots when installing the knee screw assembly can cause severe damage to the bed.

3. Be certain to align the limit switch slide (F) and the drive boots (G) which are fastened to the lift nut and torque cage. Align the switch slide and the automatic contour switch on the knee limit switch assembly. See “Knee Limit Switch” on page 4-107 for details.

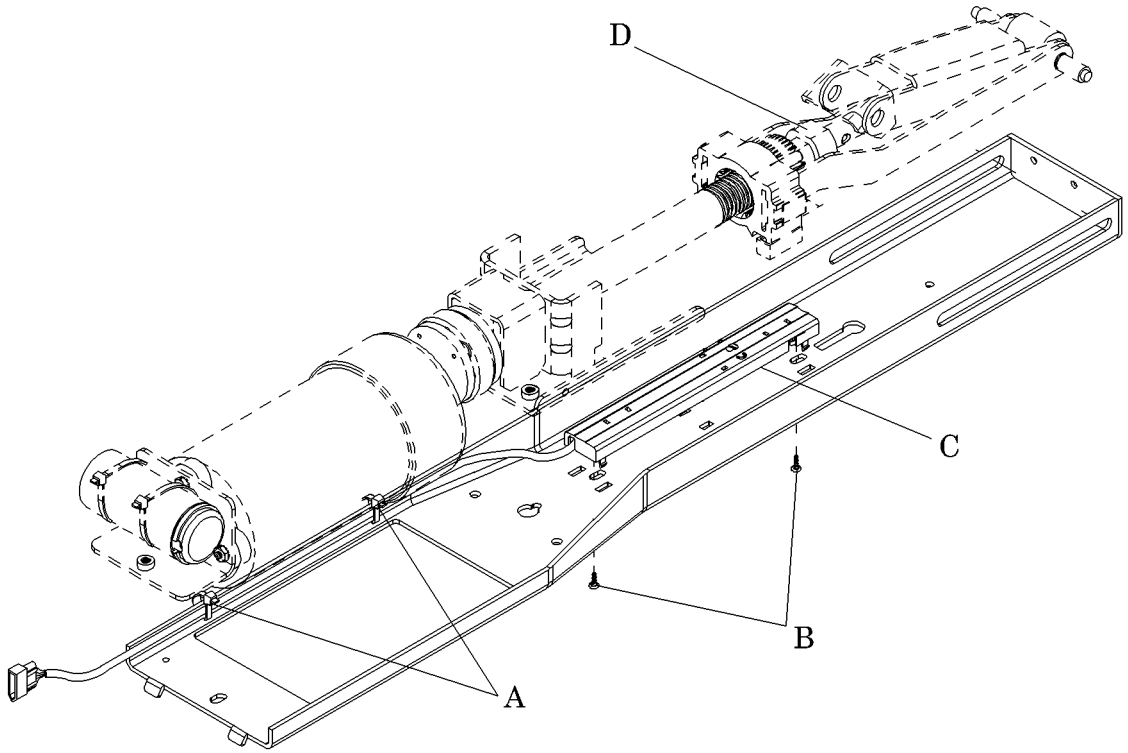
4.42 Knee Limit Switch

Tools required: T25 torx head screwdriver

Removal

1. Raise the head section to 55°.
2. Remove the head motor (refer to procedure 4.33) and the hilow head motor (refer to procedure 4.34).
3. Remove the screw from beneath the radial bracket (D) (see figure 4-62 on page 4-107).

Figure 4-62. Removing/Installing the Knee Limit Switch



4. Note the routing of the cables for the limit switch assembly (C). The cables for the new assembly must be installed in the same manner.
5. Remove the wire ties (A) from the cables.
6. Remove the two screws (B) from the knee limit switch housing (C).

7. Lift the radial bracket and the end of the knee screw assembly while sliding the limit switch assembly out.

Replacement

CAUTION:
Do not over-tighten the limit switch mounting screws. Over-tightening the mounting screws can cause the limit switches to operate improperly.

1. Install the new limit switch assembly.

2. Assemble in reverse order.

CAUTION:
Failure to align the limit switch slide, automatic contour switch, and drive boots when installing the knee screw assembly can cause severe damage to the bed.

3. Be certain to align the switch slide and the drive boots which are fastened to the lift nut and torque cage. Align the switch slide and the automatic contour switch.

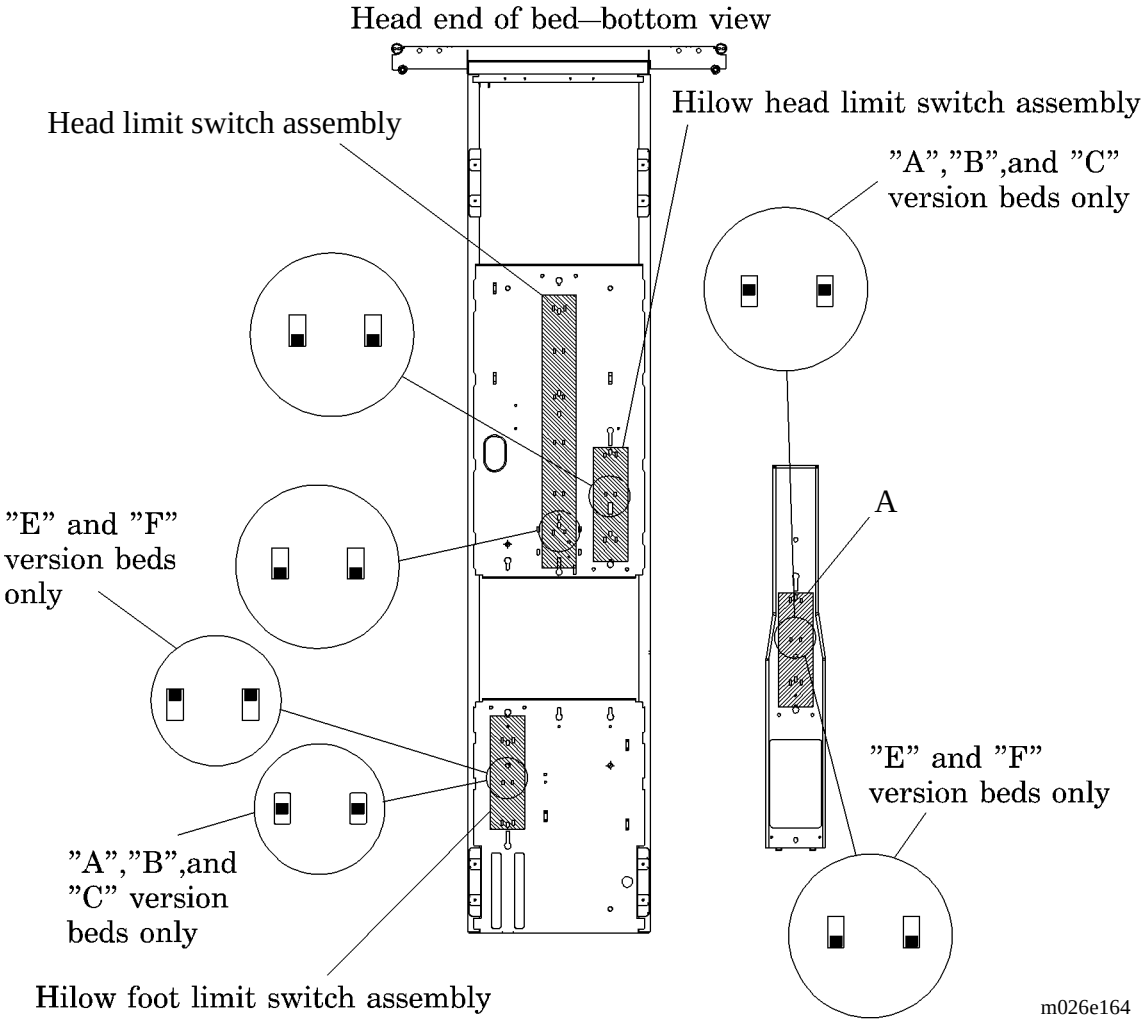
Adjustment—"A", "B", and "C" Version Beds Only

NOTE:
The "E" and "F" version beds do not require adjustment to the knee limit switch assembly

1. Determine which limit switch package you are working with by comparing it to figure 4-57 on page 4-97.

2. Adjust the knee limit switch package (A) on "A", "B", and "C" version beds until the tabs are centered in the slots ((see figure 4-63 on page 4-109).

Figure 4-63. Knee Limit Switch Package Tab and Slot Orientation


Head end of bed—bottom view
Head limit switch assembly
Hilow head limit switch assembly
"A","B",and "C" version beds only
"E" and "F" version beds only
A
"E" and "F" version beds only
"A","B",and "C" version beds only
Hilow foot limit switch assembly
m026e164

CAUTION:
Do not over-tighten the limit switch mounting screws. Over-tightening the mounting screws can cause the limit switches to operate improperly.

3. Tighten the mounting screws.

4.43 CPR Handle

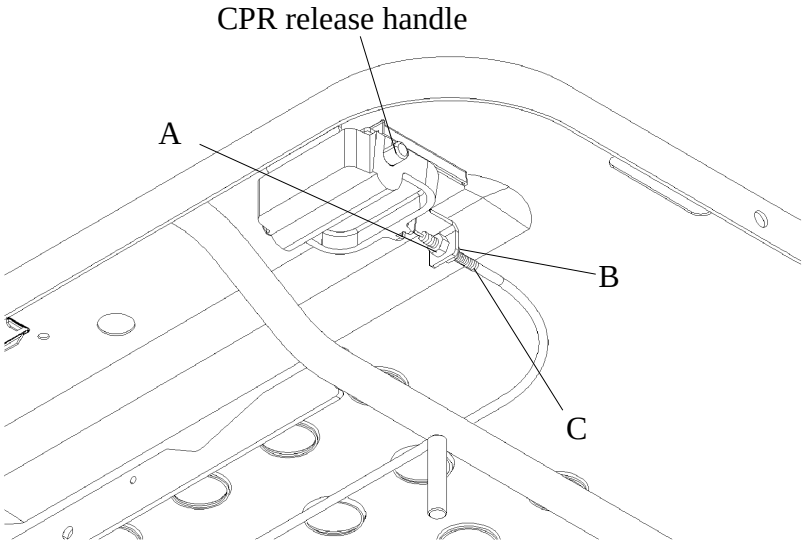
Tools required: (2) 1/2" open end wrenches

Adjustment

1. Remove the head end covers. See “Covers—Head End” on page 4-15.

2. Loosen both jam nuts (A) and (B) on the back side of the CPR release handle (see figure 4-64 on page 4-110).

Figure 4-64. CPR Release Handle Cable Connection at the Handle



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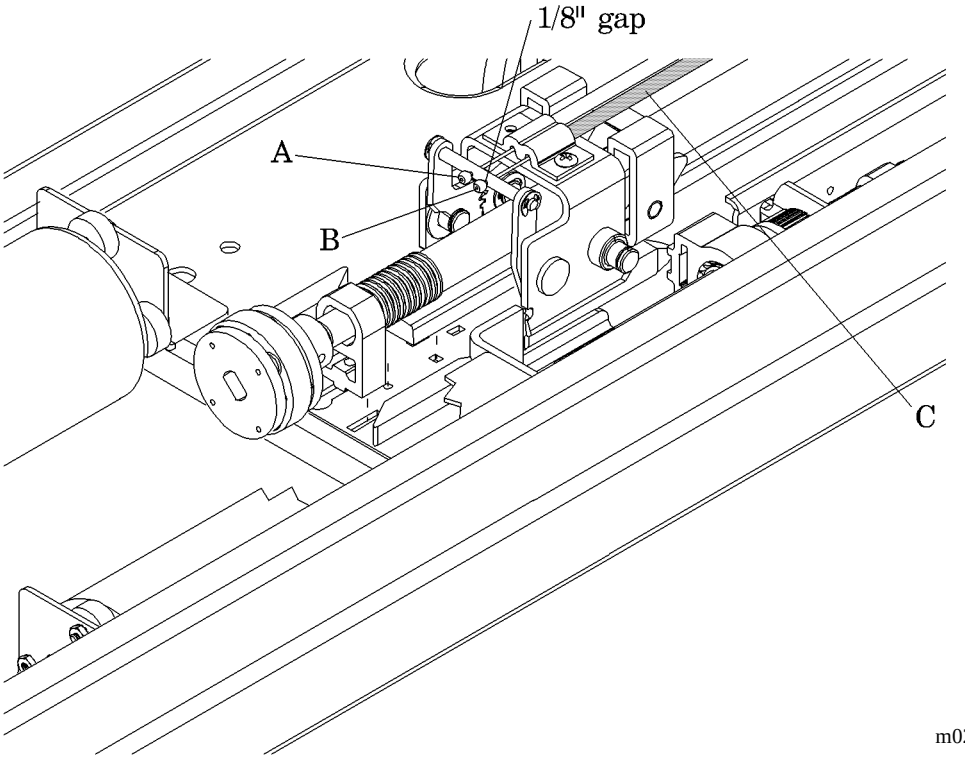
3. Locate the cable ball stop (B) as it passes through the latch release bar (A) on the CPR mechanism (see figure 4-65 on page 4-111).

Figure 4-65. CPR Release Handle Adjustment



4. Adjust the threaded end of the CPR cable(C), located on the back side of the CPR release handle(see figure 4-64 on page 4-110), to establish 1/8" gap between the cable ball stop (B) and the latch release bar (A) (see figure 4-65 on page 4-111).

5. Tighten both jam nuts (A) and (B) on the back side of the CPR release handle(see figure 4-64 on page 4-110).

6. Activate the CPR release handle to ensure that the cable adjustments are correct.

4.44 CPR Limit Switch

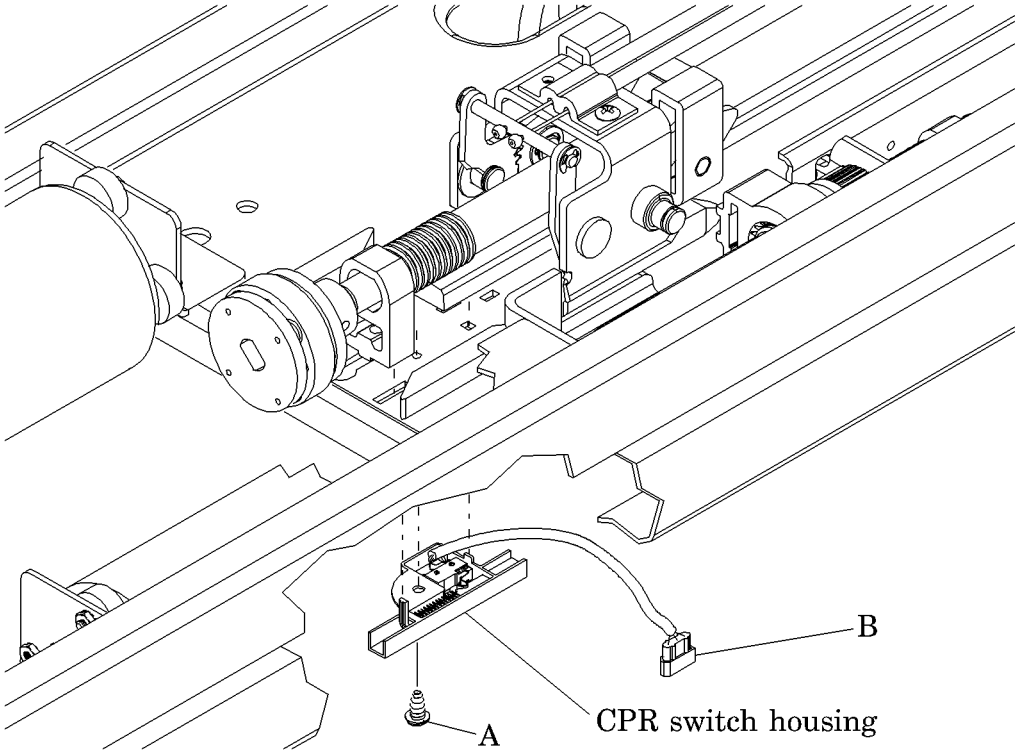
Tools required: T25 torx head screwdriver
Extraction tool (P/N 428356)

Removal

1. Remove the electronics pan assembly. See “Electronics Pan Assembly” on page 4-68.

2. Remove the screw (A) from the CPR limit switch housing (see figure 4-66 on page 4-112).

Figure 4-66. Removing/Installing the CPR Limit Switch



3. Disconnect the limit switch cable connector.

4. Locate and mark the two wires coming from the CPR switch to the connector.

5. Use the extraction tool to remove the black and white wires in the limit switch cable connector (B) coming from the CPR switch.

Replacement

1. Install the new CPR switch. There is no adjustment for this switch.
2. Assemble in reverse order.

4.45 Hilow Foot Screw Assembly

Tools required: T25 torx head screwdriver
T25 torx ratchet driver 2" x 4" x 30" lumber

Removal

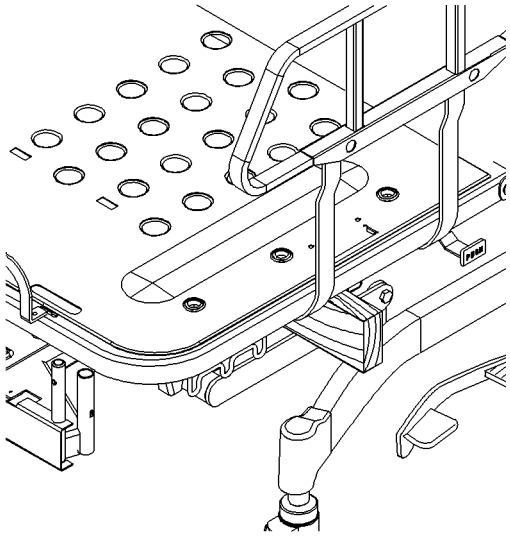
WARNING:
Use a 2 x 4 to support the foot end of the bed when removing the foot screw assembly. The foot end of the bed will fall during this procedure if it is not supported. Personal injury or equipment damage can result.

1. Place a 2 x 4 between the intermediate frame and the foot lift arm assembly.

WARNING:
On “E” and “F” version beds, fine adjustment is required when transferring the load from the drive screw to the wood blocking. If the “E” or “F” version bed is “unloaded” too far, the hilow remote switch will trip and the bed will automatically rise for three seconds. When the intermediate frame nears the wood blocking on these version beds, just “bump” the hilow down switch until contact is made and the foot end of the bed is supported. Personal injury or equipment damage can result.

2. Lower the hilow onto the 2 x 4 to support the foot end of the bed (see figure 4-67 on page 4-114).

Figure 4-67. Using Wood Blocking to Support the Foot End of the Bed



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3. Remove the hilow foot motor assembly. See “Hilow Foot Motor” on page 4-84.

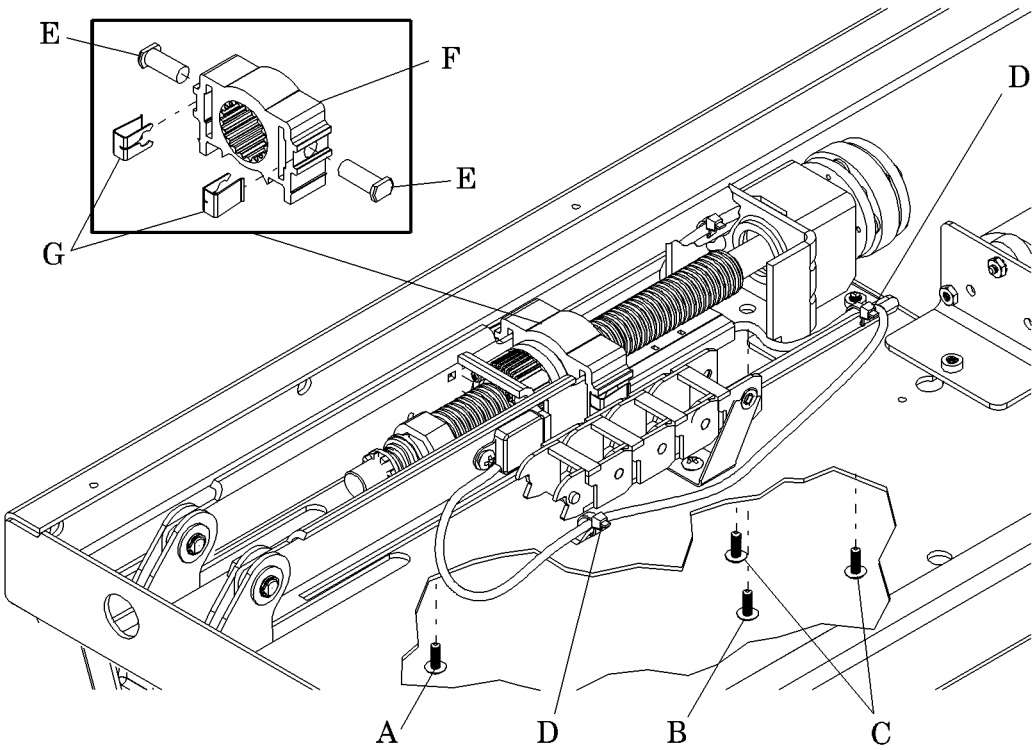
SHOCK HAZARD:

Unplug the bed from its power source. Failure to do so could result in personal injury or equipment damage.

4. Unplug the bed from its power source.

5. Loosen screws (A) and (B) approximately 1/8" (see figure 4-68 on page 4-115).

Figure 4-68. Removing/Installing Hilow Foot Screw Assembly



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6. Remove two screws (C) on the hilow foot drive screw assembly.

7. Cut the two wire ties (D) connecting the limit switch cables to the thrust bracket.

8. Remove the two clips (G) and pins (E).

9. Use a standard screwdriver if necessary to remove the hilow straps from the torque cage (F).

10. Slide the hilow foot drive screw assembly toward the head of the bed until the screw (B) can be lifted from the key hole slot.

11. Slide the assembly toward the foot of the bed until screw (A) can be lifted from the key hole slot to remove the assembly from the bed.

Replacement

1. Make the necessary repairs to the assembly.

2. Assemble in reverse order.

CAUTION:
Failure to align the limit switch slide and the drive boots when installing the hilow foot drive screw can cause severe damage to the bed.

3. Align the limit switch slide and the drive boots that are fastened to the lift nut and torque cage. Check the hilow foot limit switch adjustment (refer to procedure 4.46).

4.46 Hilow Foot Limit Switch

Tools required: T25 torx head screwdriver 2" x 4" x 30" lumber

Removal

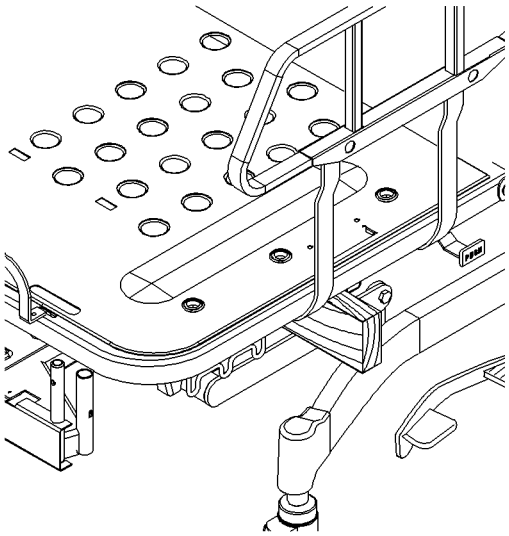
WARNING:
Use a 2 x 4 to support the foot end of the bed when removing the foot screw assembly. The foot end of the bed will fall during this procedure if it is not supported. Personal injury or equipment damage can result.

1. Place a 2 x 4 between the intermediate frame and the foot lift arm assembly.

WARNING:
On “E” and “F” version beds, fine adjustment is required when transferring the load from the drive screw to the wood blocking. If the “E” or “F” version bed is “unloaded” too far, the hilow remote switch will trip and the bed will automatically rise for three seconds. When the intermediate frame nears the wood blocking on these version beds, just “bump” the hilow down switch until contact is made and the foot end of the bed is supported. Personal injury or equipment damage can result.

2. Lower the hilow onto the 2 x 4 to support the foot end of the bed (see figure 4-67 on page 4-114).

Figure 4-69. Using Wood Blocking to Support the Foot End of the Bed



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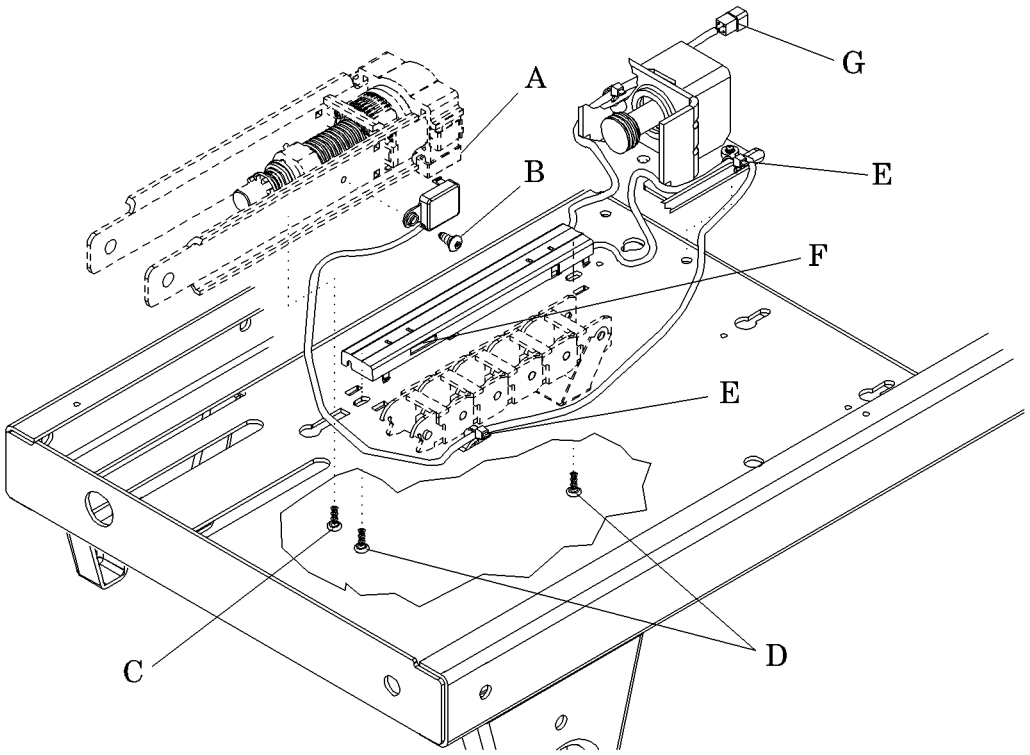
3. Remove the foot end cover. See “Cover—Foot End” on page 4-13.

4. Remove screw (C) from the radial bracket on the hilow foot drive screw assembly (see figure 4-70 on page 4-118).

Figure 4-70. Removing/Installing the Hilow Foot Limit Switch



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5. Cut the three wire ties (E) connecting the limit switch cables to the thrust bracket and the bed frame.

6. Disconnect the limit switch connector (G).

7. Remove screw (B) from the limit switch on the lift arm.

8. Remove two screws (D) from the main limit switch.

9. Remove the two clips (G) and pins (E) (see figure 4-68 on page 4-115).

10. Use a standard screwdriver, if necessary, to remove the hilow straps from the torque cage (F).

11. Lift the radial bracket and hilow straps and slide the limit switch assembly from the bed.

Replacement

CAUTION:
Do not over-tighten the limit switch mounting screws. Over-tightening the mounting screws can cause the limit switches to operate improperly.

1. Install the new limit switch assembly. Mount the limit switch so that its mounting screws are to the foot end of their mounting slots.

CAUTION:
Failure to align the limit switch slide and the drive boots can cause severe damage to the bed.

2. Align the limit switch slide and the drive boots that are fastened to the lift nut and torque cage.

3. Assemble in reverse order.

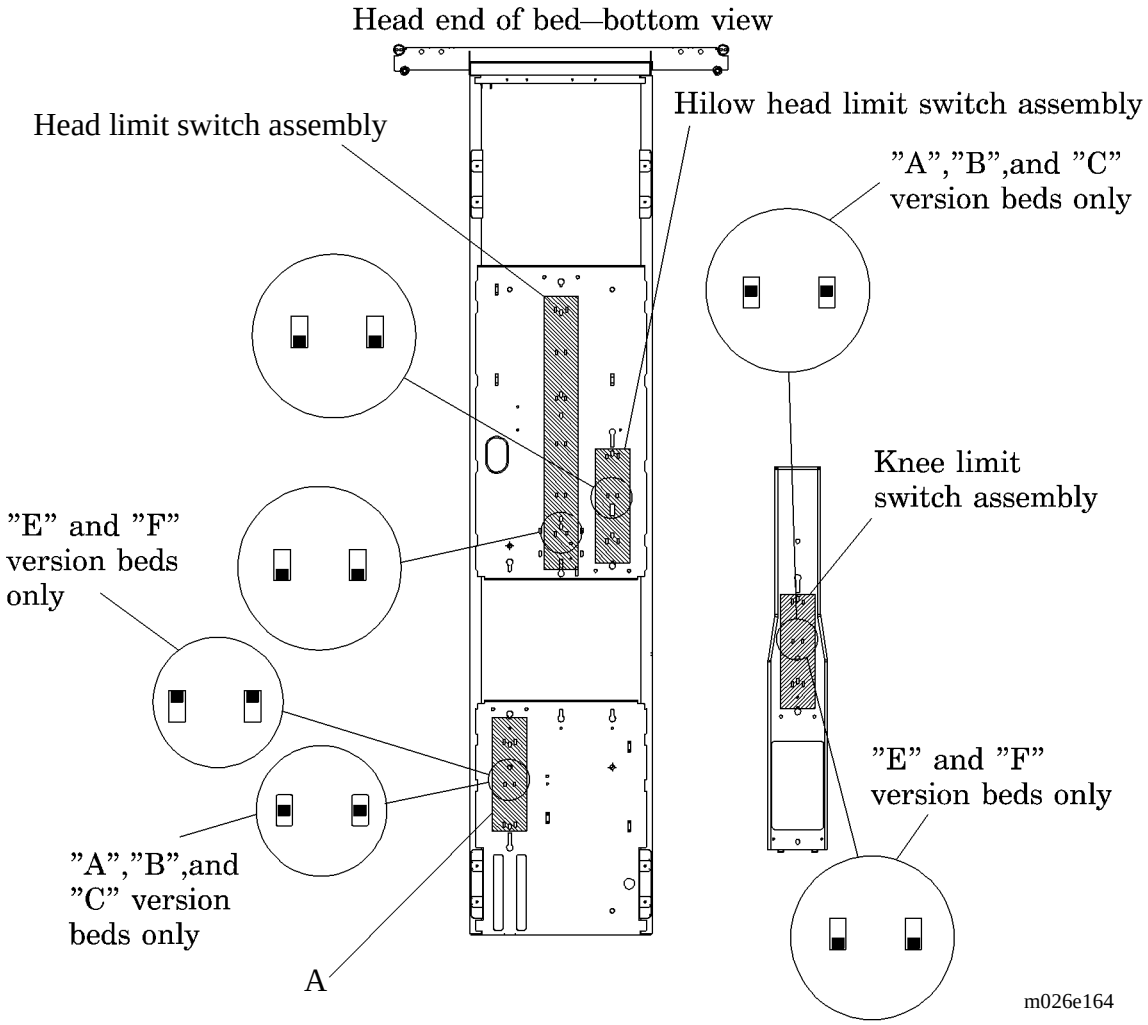
Adjustment—"A", "B", and "C" Version Beds Only

NOTE:
The "E" and "F" version beds do not require adjustment to the hilow foot limit switch assembly

1. Determine which limit switch package you are working with by comparing it to figure 4-57 on page 4-97.

2. Adjust the hilow foot limit switch package (A) until the tabs are centered in the slots on "A", "B", and "C" version beds (see figure 4-71 on page 4-120). Adjust the hilow foot limit switch package until the tabs are at the head end of the slots on "E" version beds (see figure 4-71 on page 4-120).

Figure 4-71. Hilow Foot Limit Switch Package Tab and Slot Orientation


Head end of bed—bottom view
Head limit switch assembly
Hilow head limit switch assembly
"A","B",and "C" version beds only
Knee limit switch assembly
"E" and "F" version beds only
"E" and "F" version beds only
"A","B",and "C" version beds only
A
m026e164

CAUTION:
Do not over-tighten the limit switch mounting screws. Over-tightening the mounting screws can cause the limit switches to operate improperly.

3. Tighten the mounting screws.

4.47 Casters

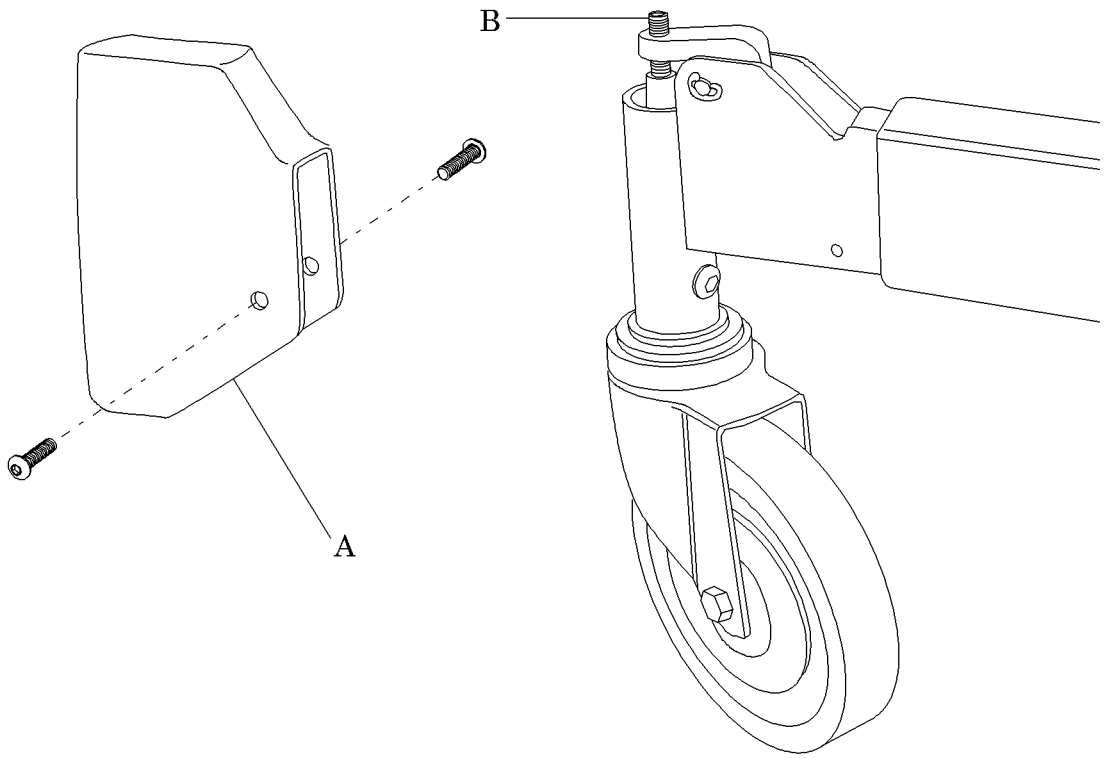
Tools required: T25 torx head screwdriver
5/32" allen wrench

Adjustment

There are two casters involved in the adjustment of the locking base system. The foot end caster on the left side of the bed is a brake/steer caster and controls half of the brake feature. The head end caster on the right side of the bed controls the other half of the brake feature. The remaining two casters are basic swivel casters. Both the brake/steer and brake casters must be adjusted.

1. Remove the plastic leg covers (A) over both the brake/steer and the brake casters (see figure 4-72 on page 4-121).

Figure 4-72. Adjusting Brake Casters



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2. Place the brake/steer pedal in the steer position.

3. Locate the setscrews (B) above the caster.

4. Turn the setscrew (B) on the brake/steer caster **clockwise** until the caster swivels freely, then turn the setscrew 1/2 turn **counterclockwise**.

5. Place the brake/steer pedal in the brake position.

6. Turn the setscrew (B) on the head brake caster **counterclockwise** until light brake occurs, then turn the setscrew two turns **clockwise**.

7. Check both casters for proper operation in all positions.

8. Reinstall the plastic leg covers (A).

CAUTION:
Do not use solutions such as turpentine, paint or lacquer thinner, etc. to clean the caster. This deteriorates the caster life and performance.

9. If the brakes seem to slip after adjustment, there may be floor wax buildup on the tire tread. Periodically clean the tread with the same cleaning solution used to clean the bed.

4.48 Brake Cam

Tools required: T25 torx head screwdriver
5/32" allen wrench
Punch
Hammer

Removal

1. Remove the plastic covers from the foot end caster on the left side of the bed and head end caster on the right side of the bed.

2. Lower the bed to its low position

3. Slide the siderails on one side of the bed into their “stored” position. Tie these siderails in place.

WARNING:
Unplug the bed from its power source before laying the bed on its side. Switches may become activated, causing the bed to operate without warning and cause personal injury.

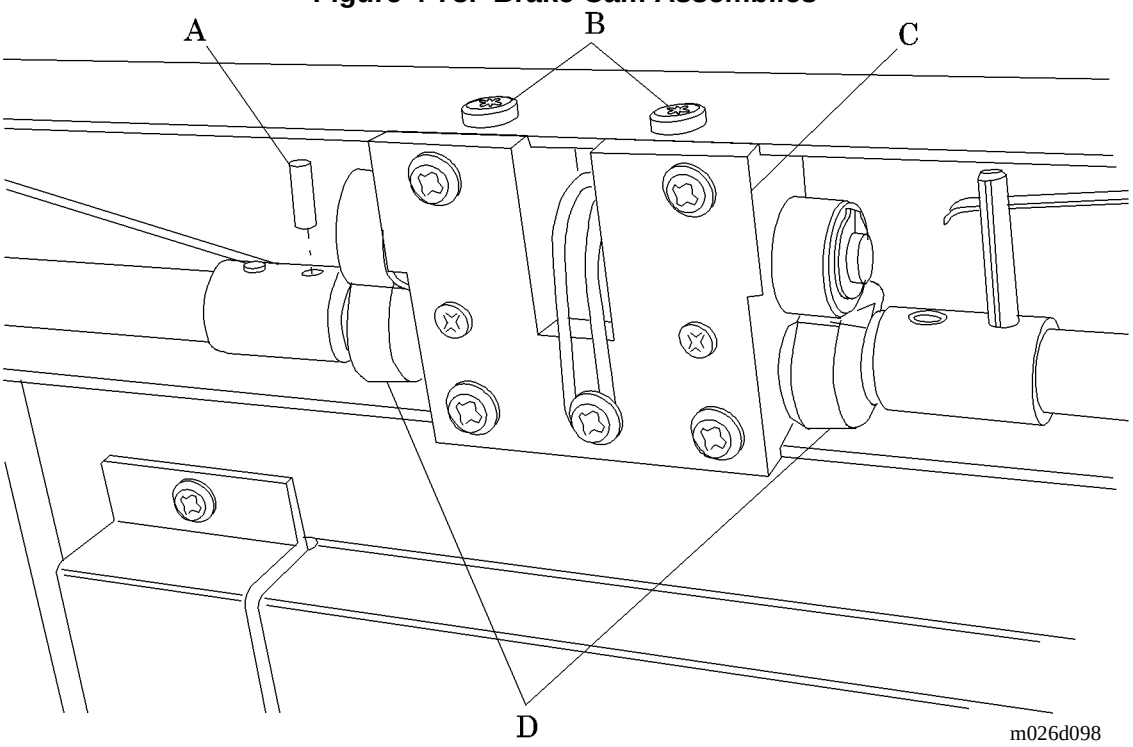
4. Unplug the bed from its power source.

WARNING:
To avoid injury, get additional help to lay the bed over on its side. The bed weighs approximately 325 lb (147 kg).

5. Lay the bed over on its side.

6. Remove one roll pin (A) located just under the brake block mechanism (C) (see figure 4-73 on page 4-124).

Figure 4-73. Brake Cam Assemblies



7. Pull the upper brake/steer pedal up through the brake block mechanism (C) and the cams (D) will fall out.

NOTE:
Be sure to note the orientation of the cams.

Replacement

1. Assemble the brake/steer pedals and the new cams (D).

WARNING:
To avoid injury, get additional help to turn the bed onto its casters.

2. After the roll pins (A) have been inserted through the brake/steer pedal shaft, turn the bed back onto its casters.

3. Adjust the brake/steer and brake casters (see “Casters” on page 4-121).

4.49 Brake Block Mechanism

Tools required: Phillips head screwdriver
Punch
T25 torx head screwdriver
Hammer
5/32" allen wrench

Removal

1. Perform steps 1 through 6 of the procedures for the “Brake Cam” on page 4-123.
2. Remove the four screws that hold the brake block mechanism into the channel.
3. Remove the seven screws that go into the bottom of the mechanism. Be sure to carefully note how the parts are assembled.
4. Disassemble the screws, the adapter plate and the bearings from the mechanism assembly.

Replacement

1. Make the necessary repairs to the mechanism assembly.
2. After assembling the mechanism, insert and secure it in the channel.
3. Assemble the cams and brake/steer pedals.
4. Assemble the roll pins through the brake/steer pedal shaft.

WARNING:
To avoid injury, get additional help to return the bed onto its casters. The bed weighs approximately 325 lb (147 kg).

5. Turn the bed back onto its casters.
6. Adjust the brake/steer and brake casters, see “Casters” on page 4-121.

4.50 Brake Light Switch

Tools required: Phillips head screwdriver
Pliers

Removal

The switch that actuates the brake light in the face of the nurse control panel is located in the cross channel of the base assembly that houses the brake mechanism.

1. Lower the bed to its low position.

2. Slide the siderails on one side of the bed into their “stored” position. Tie these siderails in place.

WARNING:
Unplug the bed from its power source before laying the bed on its side. Switches may become activated, causing the bed to operate without warning and cause personal injury.

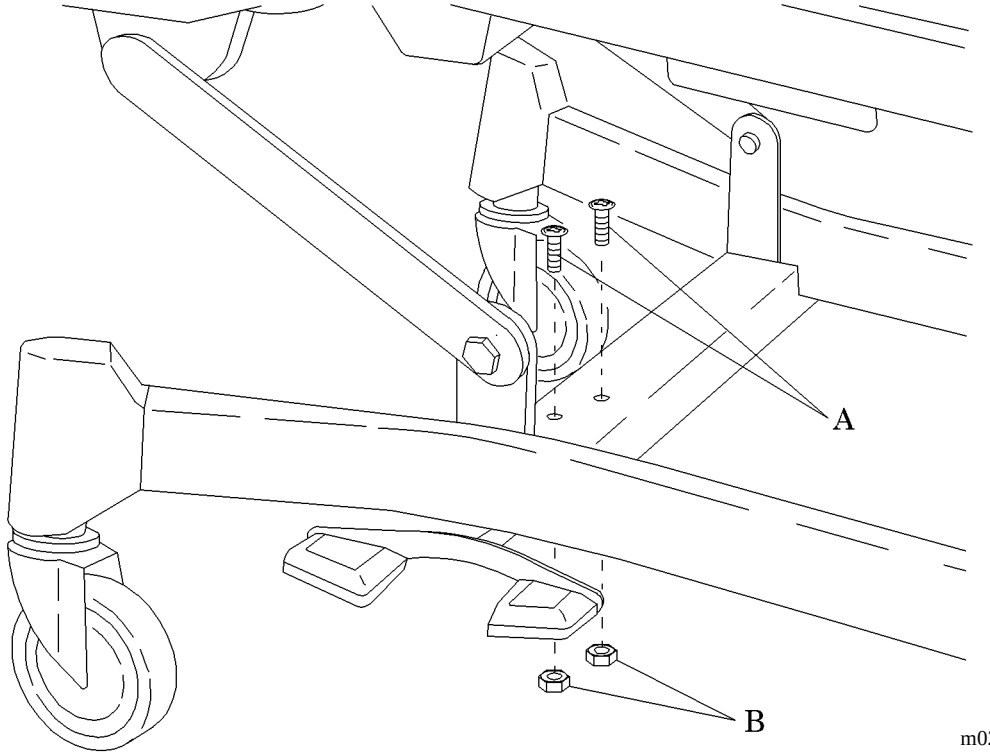
3. Unplug the bed from its power source.

WARNING:
To avoid injury, get additional help to lay the bed over on its side. The bed weighs approximately 325 lb (147 kg).

4. Lay the bed over on its side.

5. Remove the two screws (A) and nuts (B) that hold the switch in place (see figure 4-74 on page 4-127).

Figure 4-74. Removing/Installing the Screws for the Brake Light Switch



6. Transfer the wires to the new switch.

Replacement

1. Assemble in reverse order.

WARNING:
To avoid injury, get additional help to return the bed onto its casters. The bed weighs approximately 325 lb (147 kg).

2. Turn the bed back onto its casters.

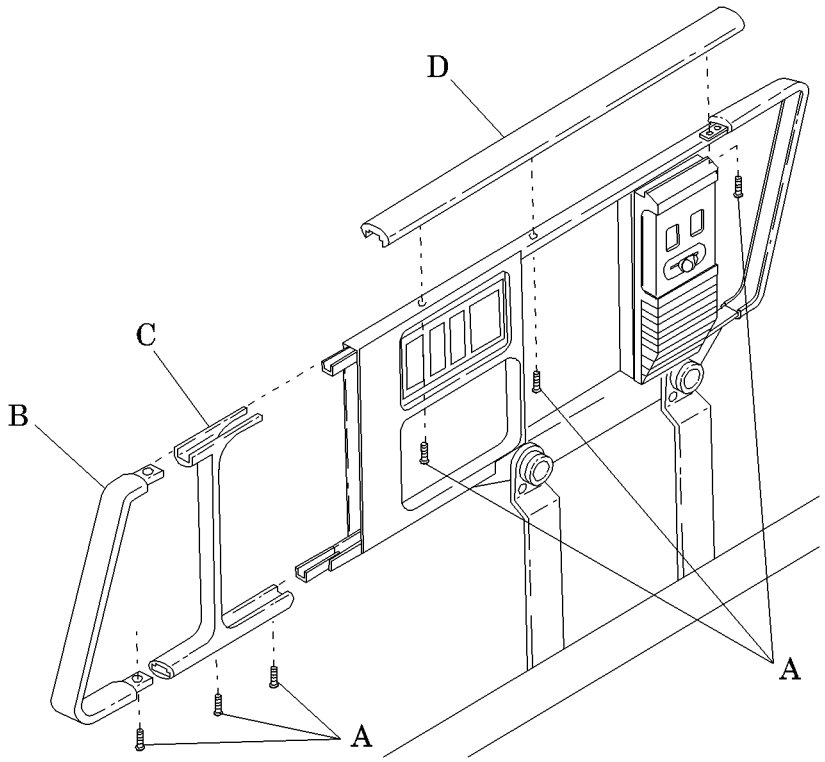
4.51 Siderail Control—Patient and Nurse

Tools required: Phillips head screwdriver
Soldering iron (30 watt max)
50/50 lead tin rosin core solder
Needle nose pliers

Removal

1. Remove the six screws (A) to remove the end cane (B), control housing cover (C), and top cane (D) (see figure 4-75 on page 4-128).

Figure 4-75. Removing/Installing the Patient and Nurse Siderail Control



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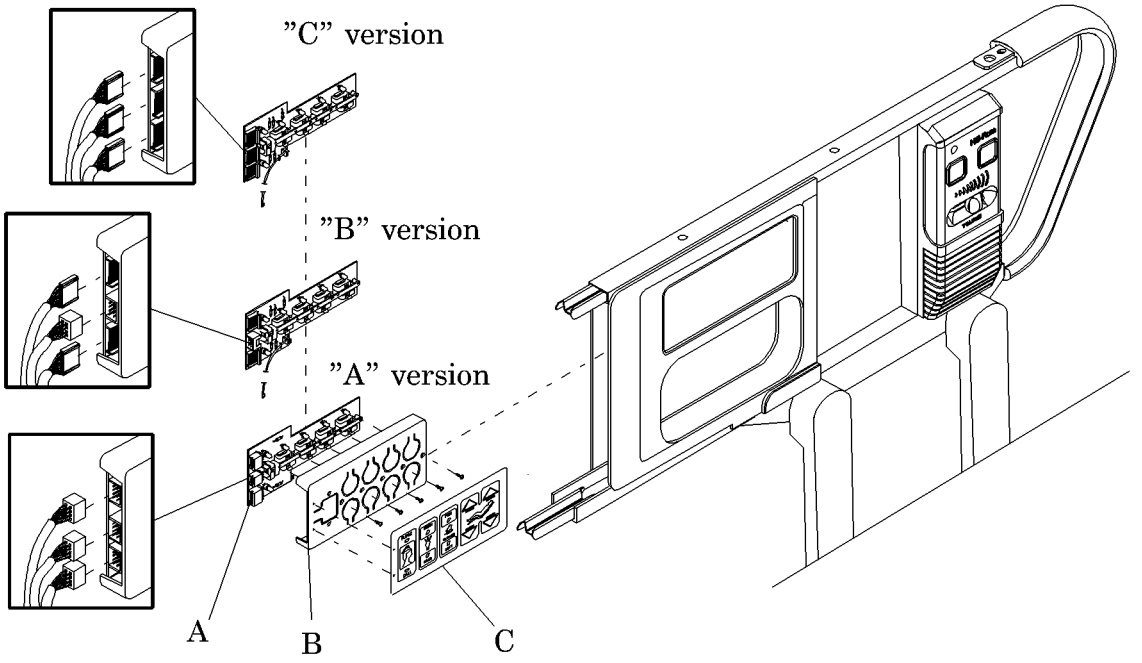
2. Remove the three pin connectors (A) from the patient control unit (see figure 4-76 on page 4-129).

Figure 4-76. Removing/Installing the Switch P.C. Board Assembly



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3. The nurse control unit, patient control unit, and control housing can be removed from the siderail.

4. To further disassemble the nurse control unit go to step 8.

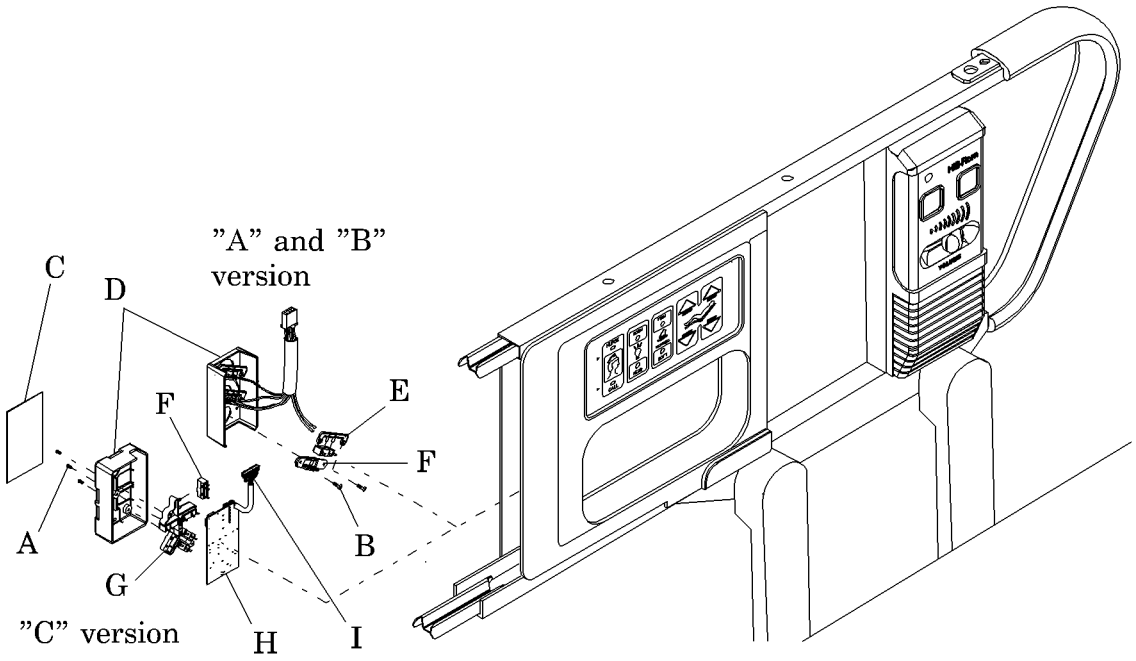
5. To remove the switch P.C. board assembly (A) from the patient control unit, peel the patient control overlay (C) off of the assembly.

6. Remove the six screws from the patient control panel (B).

7. Replace the switch P.C. board assembly (A).

8. To remove a nurse control switch, remove screws (A) or (B) from the appropriate switch assembly (see figure 4-77 on page 4-130).

Figure 4-77. Removing/Installing Nurse Control Switch



9. Using the needle nose pliers and a soldering iron, heat the old solder joints and transfer the wires to the new switch.

CAUTION:
Check the color of the actuator on the new and old nurse control switch. Ensure they are the same. Damage to the bed can result.

Replacement

Assemble in reverse order.

4.52 Siderails

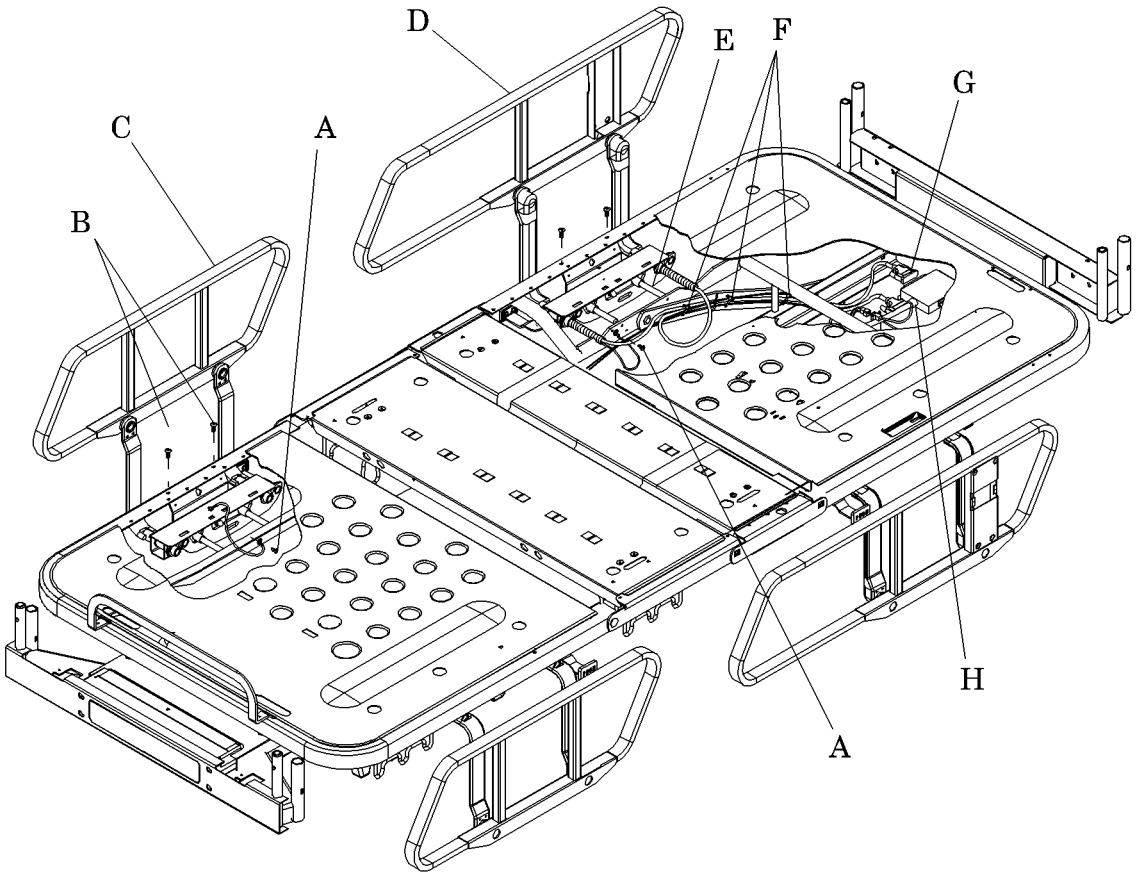
Tools required: Phillips head screwdriver
T25 torx head screwdriver

Removal

1. Raise the head or foot section of the bed for the siderail being removed.

2. If a head end siderail (D) is being removed, unplug the siderail control cable (G) and siderail communication cable(H), if present, from the bed (see figure 4-78 on page 4-131).

Figure 4-78. Removing/Installing Siderails



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3. Remove the three wire ties (F) from the head lift arm.

4. Remove screw (A) that attaches the siderail grounding strap to the bed frame.

5. Remove two screws (B) that secure the siderail to the head or foot section.

Replacement

Assemble in reverse order.

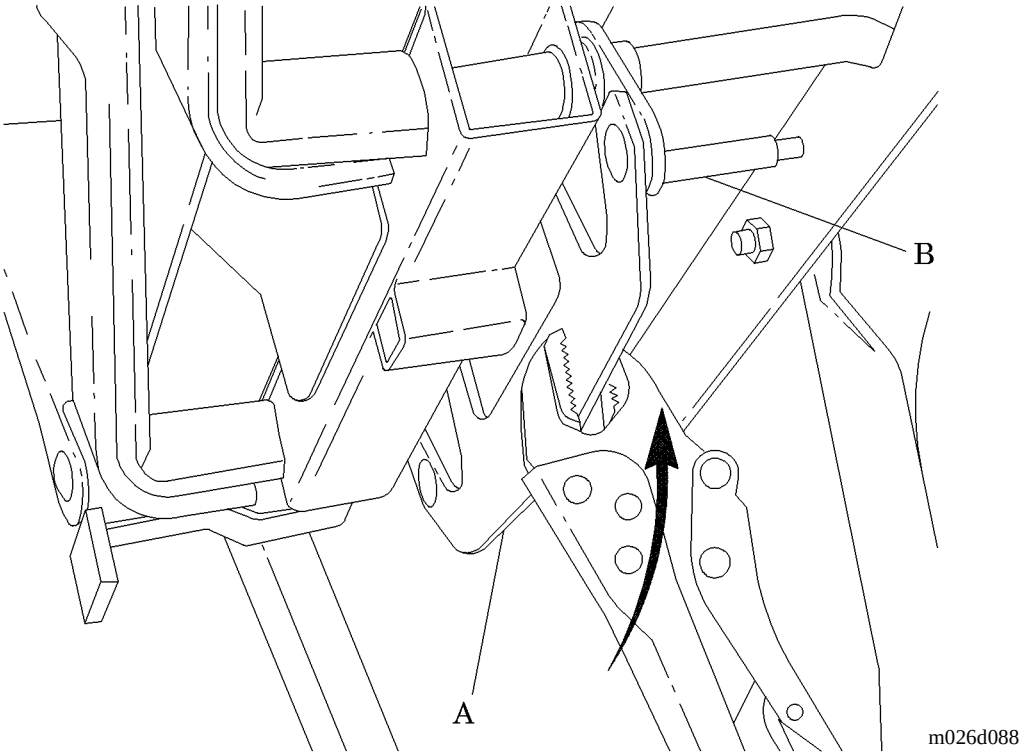
Adjustment

Tools required: Vise grip or crescent wrench

1. Raise the head section or foot section to the extreme “up” position.

2. If the strap(A) is bent, use a crescent wrench or vise grip to straighten the strap (see figure 4-79 on page 4-132).

Figure 4-79. Adjusting Hard to Rotate Siderails



3. Make sure the black slide rods (B) are parallel.

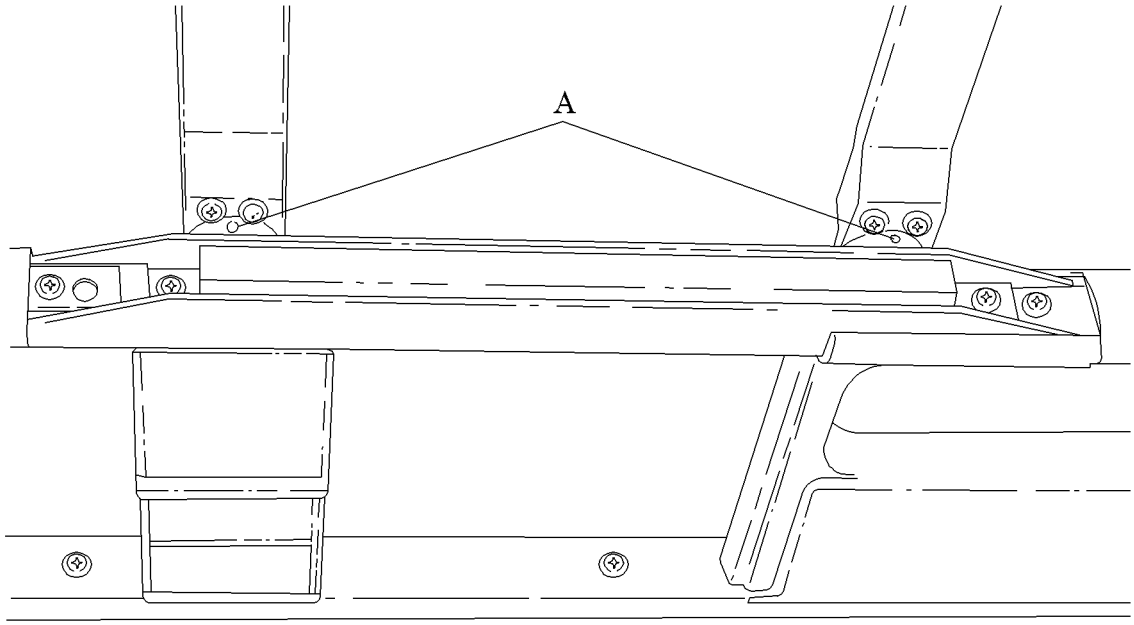
4. Clean and lubricate.

5. If the siderails are frozen:

   a. Raise the siderail to the up position, or remove it from the bed completely.

b. Apply grease to the grease ports (A) (see figure 4-80 on page 4-133).

Figure 4-80. Grease Ports on Siderails



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4.53 SideCom Communication System Entertainment Controls

Tools required: Phillips head screwdriver
Screwdriver
Extraction tool (P/N 428356)

Removal

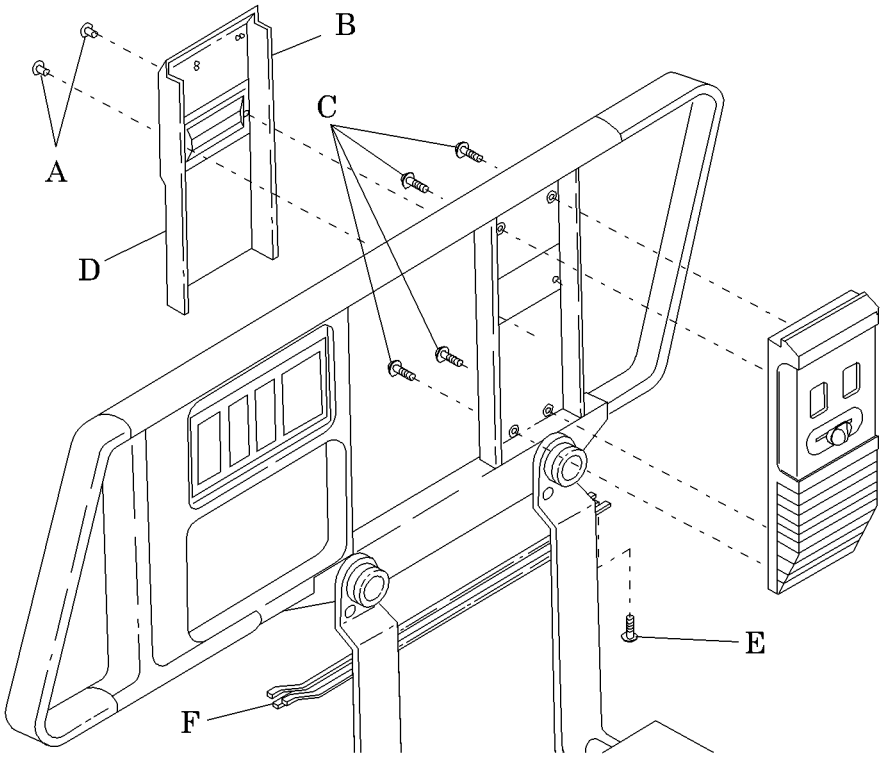
SHOCK HAZARD:

Unplug the bed from its power source. Failure to do so could result in personal injury or equipment damage.

1. Unplug the bed from its power source.

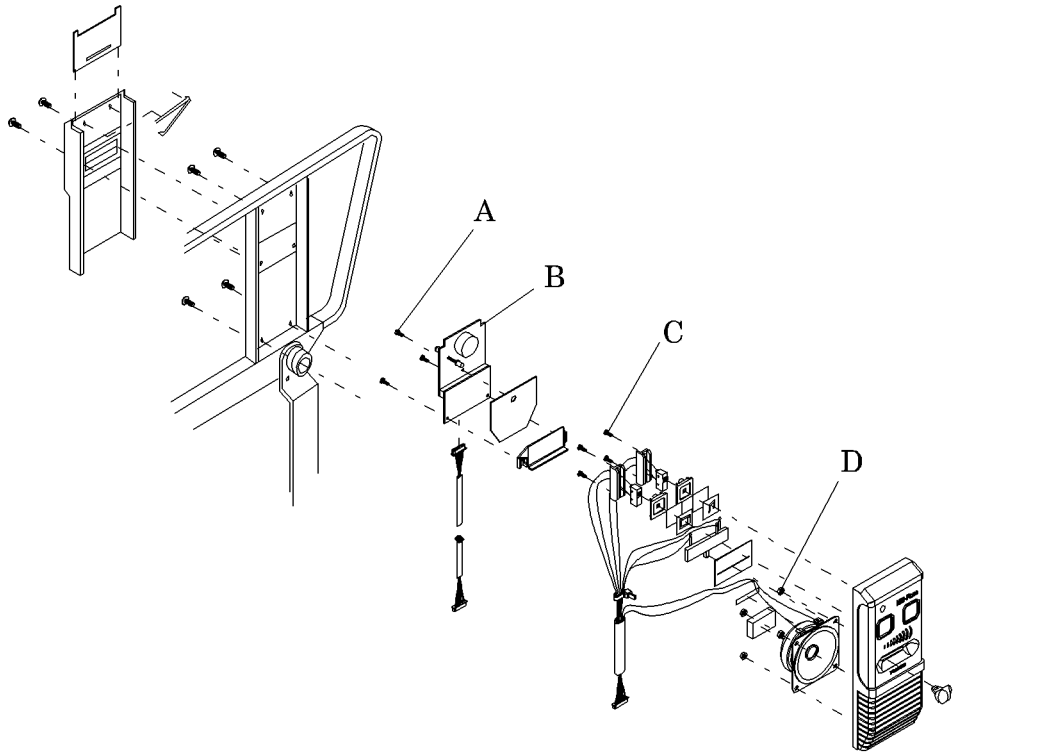
2. Lift the small sliding door (D) and remove the two screws (A) and the back cover (B) (see figure 4-81 on page 4-134). If the entertainment module does not contain the bed exit system, the small sliding door will be replaced by a plastic blank plate that must be pried out with a thin blade tool.

Figure 4-81. Removing/Installing SideCom Communication System Entertainment Controls



3. Remove the four screws (C).
4. Remove the screw (E) and the bottom cover (F).
5. Unplug the connector and lift the entertainment module out of the siderail.
6. To gain access to the TV, radio, and volume control switches, remove three screws (A) (see figure 4-82 on page 4-135). These screws hold the bed exit circuit board in place (B) on entertainment modules with the bed exit system.

Figure 4-82. Disassembly of SideCom Communication System Entertainment Controls



7. Remove the two screws (C) holding the defective switch.

NOTE:
Before removing the two screws (C) holding the defective switch, note the orientation of all components.

Replacement

1. Replacement switches, speakers and volume controls will have wire leads with terminals already soldered to them. Use the extraction tool (P/N 428356) to remove the wire leads for the defective components from the connector. Insert the terminals from the new component into the connector following the color code of the component you removed.

2. Replace the volume control by pulling it out from the backside of the module. Keep the slide button from the front side of the module to use with the replacement volume control.

3. To replace the speaker, remove the four nuts (D) holding it in place.

4. Assemble the remaining parts in reverse order.

4.54 Junction Box P.C. Board

Tools required: T25 torx head screwdriver
Phillips head screwdriver

Removal

1. Raise the bed to the high position using the hilow function.

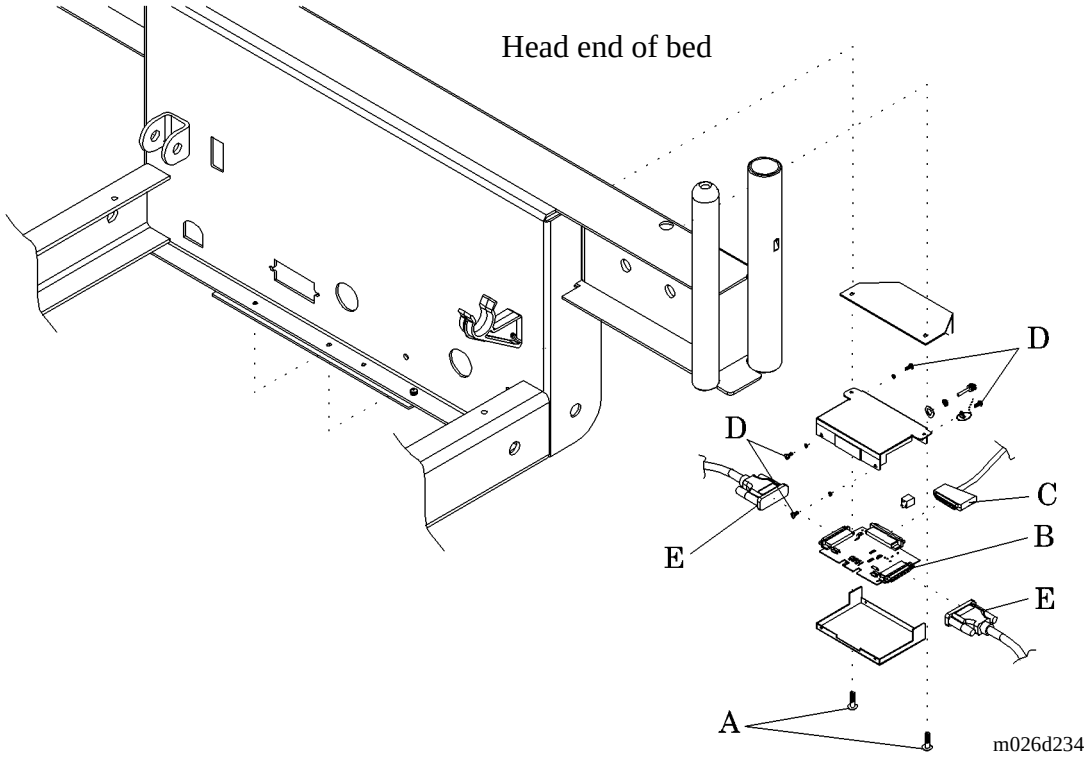
SHOCK HAZARD:

Unplug the bed from its power source. Failure to do so could result in personal injury or equipment damage.

2. Unplug the bed from its power source.

3. Remove the P379 communication cable (C) from the bed (see figure 4-83 on page 4-137).

Figure 4-83. Removing/Installing the Junction Box P.C. Board



4. Remove the two siderail communication cable connectors (E) from the junction box.

5. Remove the two screws (A) connecting the junction box to the frame of the bed.

6. Remove the four screws (D) holding the junction box top cover.

7. Remove the P.C. board (B) from the junction box.

Replacement

Assemble in reverse order.

4.55 Testport P.C. Board

Tools required: Screwdriver
Pliers

Removal

1. Raise the bed to the high position using the hilow function.

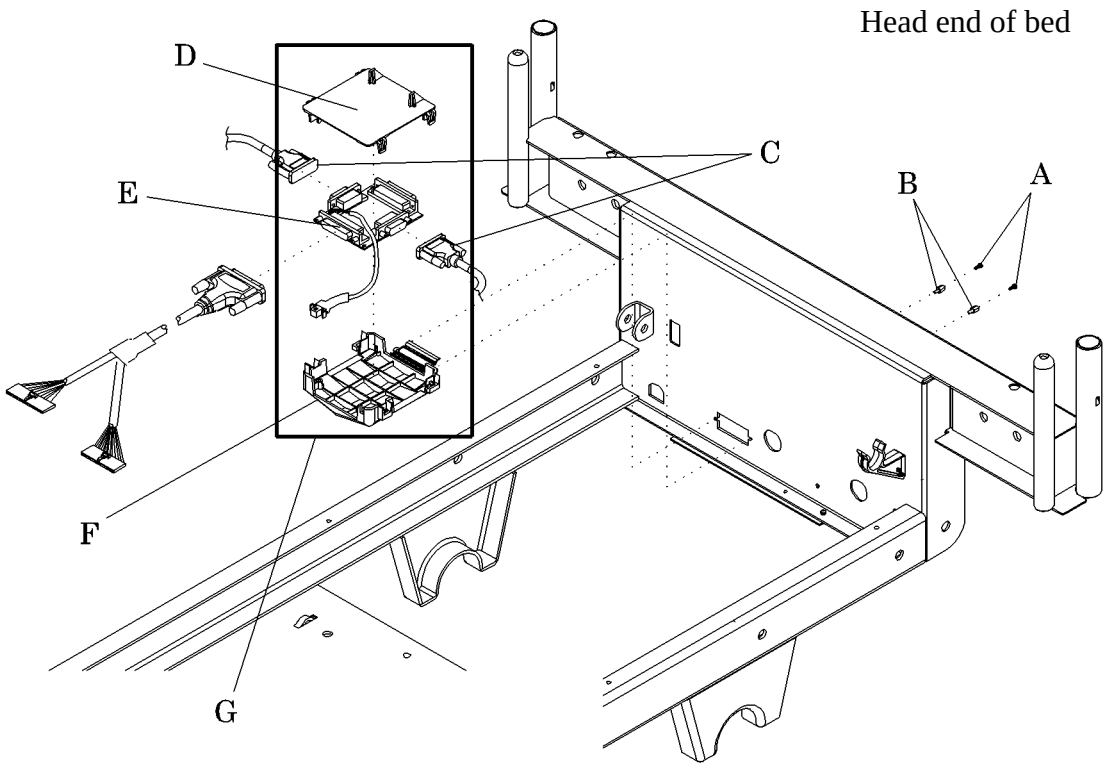
SHOCK HAZARD:

Unplug the bed from its power source. Failure to do so could result in personal injury or equipment damage.

2. Unplug the bed from its power source.

3. Remove the two screws (A) securing the cover over the open connector (see figure 4-84 on page 4-139).

Figure 4-84. Removing/Installing Testport P.C. Board



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4. Unplug all of the connectors attached to the testport P.C. board (E).
5. Remove the two screw locks (B) securing the testport P.C. board to the frame of the bed.
6. Remove the testport assembly from the bed.
7. Remove the testport lid (D) from the test port assembly.
8. Remove the testport P.C. board (E).

Replacement

Assemble in reverse order.

4.56 Analog Board

Tools required: T25 torx head screwdriver
Screwdriver (small blade)

Removal

1. Raise the bed to the high position using the hilow function.

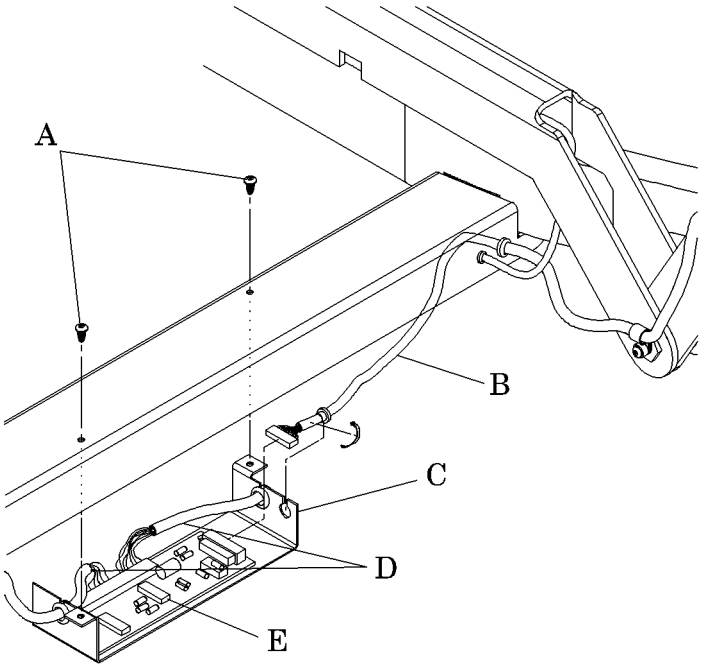
SHOCK HAZARD:

Unplug the bed from its power source. Failure to do so could result in personal injury or equipment damage.

2. Unplug the bed from its power source.

3. Remove the torx head screws (A) at the head end of the scale base frame and lower the analog board (E) (see figure 4-85 on page 4-141).

Figure 4-85. Removing/Installing the Analog Board



4. Unplug the bed scale cable (B) from the analog board (E).

5. Compress the four standoffs and remove the analog board (E) from the analog board cover(C).

6. Use the standard screwdriver to disconnect the load beam cables (D) from the analog board (E).

Replacement

1. Assemble in reverse order.

2. Recalibrate the bed scale system. See “Scale” on page 4-152.

4.57 Scale-Micro Board

Tools required: T25 torx head screwdriver
Phillips head screwdriver
Anti-static work pad
Anti-static wrist ground strap
Scissors or knife

Removal

CAUTION:
Unplug the bed from its power source before removing or installing the footboard control panel. Damage can occur to the electronics in the footboard control panel during removal or installation if the bed is plugged into its power source.

1. Unplug the bed from its power source.

2. Remove the two mounting pins and remove the footboard control panel from the bed.

CAUTION:
Do not disassemble the footboard control panel on the mattress of the bed. Ensure that you are at a static-free workstation and that you are wearing the anti-static wrist strap. Ensure that the anti-static wrist strap and workstation are properly grounded. Failure to follow these directions can cause damage to the electronics in the footboard control panel.

CAUTION:
Ensure that hands are clean, and handle the P.C. boards by their edges **only** to prevent component damage. Wear an appropriate static strap when working with electronics. Equipment damage can occur. See “P.C. Boards” on page 6-4 for additional information.

3. Place the footboard control panel in a static-free workstation.

4. Remove the control panel assembly from the footboard control panel as follows:

   a. Remove grommet (C) from the bottom of the footboard control panel (see figure 4-86 on page 4-144 and figure 4-87 on page 4-145).

CAUTION:
Gently spread the top opening of the footboard control panel when removing the nurse control panel. This will help prevent J/P51 from catching and causing damage to the cables during removal.

Figure 4-86. Removing/Installing Scale-Micro Board—"E" Version and Prior Beds

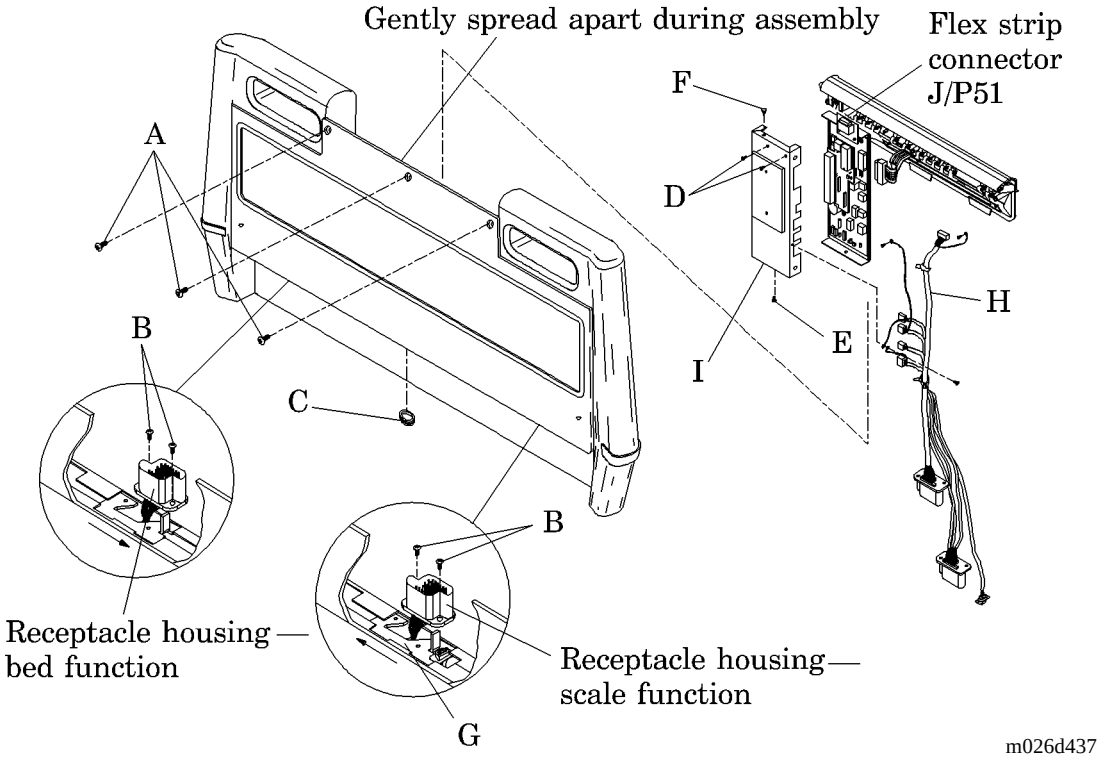
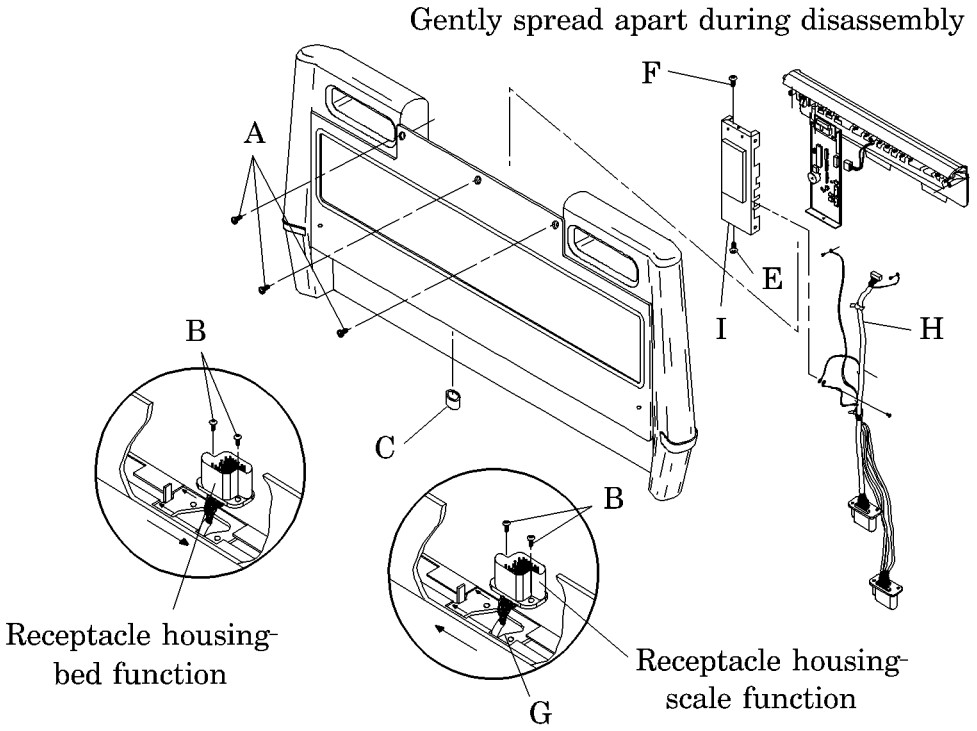


Figure 4-87. Removing/Installing Scale-Micro Board—"F" Version Bed



b. Mark the receptacle brackets (G) and the receptacle housing before disassembly.

c. Remove the two screws (B) from each of the two receptacle brackets (G) on the bottom of the footboard control panel.

d. Slide the receptacle mounting brackets and cables to the large opening in the bottom of the footboard control panel and remove them from the footboard control panel. This frees the nurse control cable (H).

e. Remove the three screws (A) and carefully pull the nurse control panel assembly up and out the top of the footboard control panel.

5. If "E" version and prior beds:

   a. Cut the insulator's 2 1/2" length in half with the scissors or knife.

   b. Place one of the pieces between the ribbon cables where the cables mount to the display board. Ensure the insulator fully covers the row of pins between the ribbon cables.

6. To remove the scale housing cover (I) on “E” version and prior beds (see figure 4-86 on page 4-144):
   a. Disconnect the nurse control cable (H) from the flex strip connector.
   b. Remove the two screws (D) to release the flex strip connector from the scale control housing cover (I).
   c. Disconnect the nurse control cable (H) to prevent damage to the flex strip.
   d. Remove screw (E) and fastener (F).
   e. Fold the scale control housing cover to the side.
7. To remove the scale housing cover (I) on “F” version beds (see figure 4-87 on page 4-145):
   a. Remove screw (E) and fastener (F).
   b. Fold the scale control housing cover to the side.
   c. Disconnect the nurse control cables (H).
8. Remove the two screws (A) and (B) from the scale-micro board (see figure 4-88 on page 4-146 and figure 4-89 on page 4-147).

Figure 4-88. Removing/Installing Scale-Micro P.C. Board—”E” Version and Prior Beds

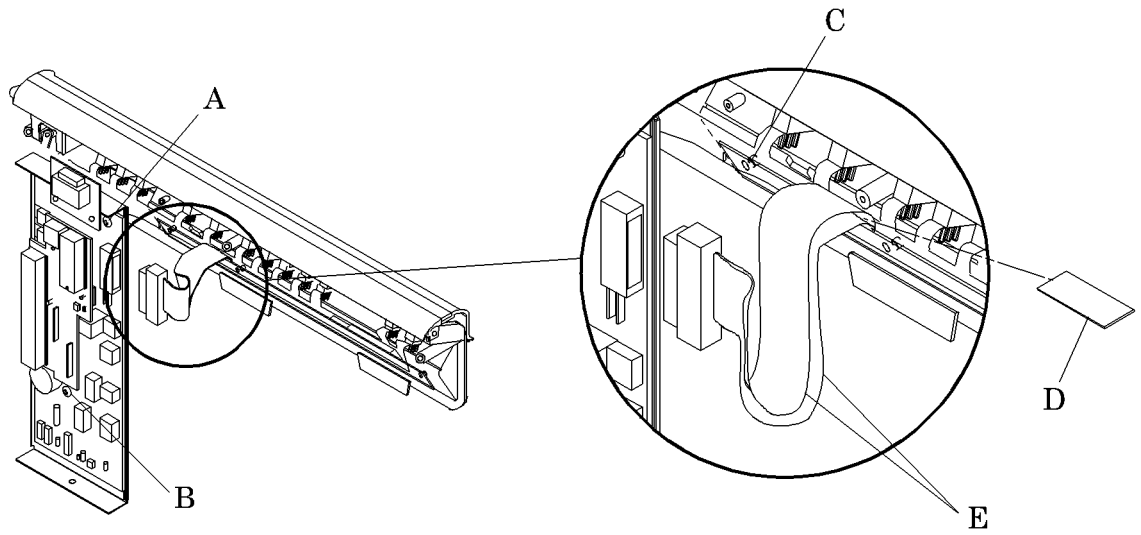


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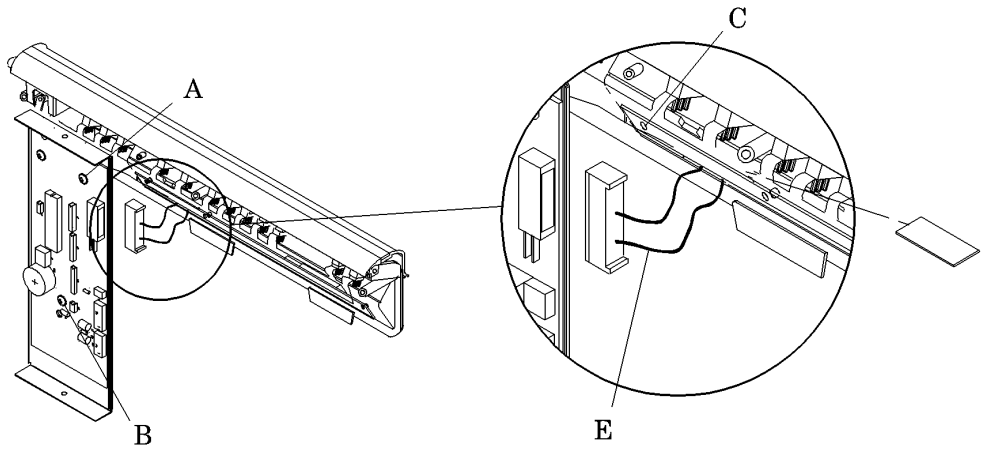
Figure 4-89. Removing/Installing Scale-Micro P.C. Board—"F" Version Bed



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9. Remove the scale-micro board and MPB fiche paper from the scale control housing cover.

Replacement

1. Place a piece of insulator (D) over the hole into which the screw inserts.
2. Replace the MPB fiche paper with the one provided.
3. Install the new scale-micro board.
4. Assemble the remaining parts in reverse order.

NOTE:
Pay special attention to the receptacle housings during reassembly. Ensure that the 45° corner fillets are properly oriented.

5. Plug the bed into its appropriate power source.
6. Calibrate the scale. See "Scale" on page 4-152.

4.58 Load Cell

Tools required:

T45 torx head screwdriver	5/32" allen wrench
Screwdriver	1/4" allen wrench
Pliers	1/2" wrench
Jack stands	Feeler gauge

Loctite (P/N SA7110)
Torque wrench (250 in-lb capacity) with 1/4" allen adapter and 1/2" socket

Removal

WARNING:
Use jack stands to support the weight of the bed when removing and installing the load cell. If jack stands are not used, the bed can fall, causing personal injury and damage to the bed.

1. Place the jack stands under the bed.

2. Remove the bolts (A) from both load cell covers (C) (see figure 4-90 on page 4-148 and figure 4-91 on page 4-149).

Figure 4-90. Removing/Installing Load Cells—"E" Version and Prior Beds

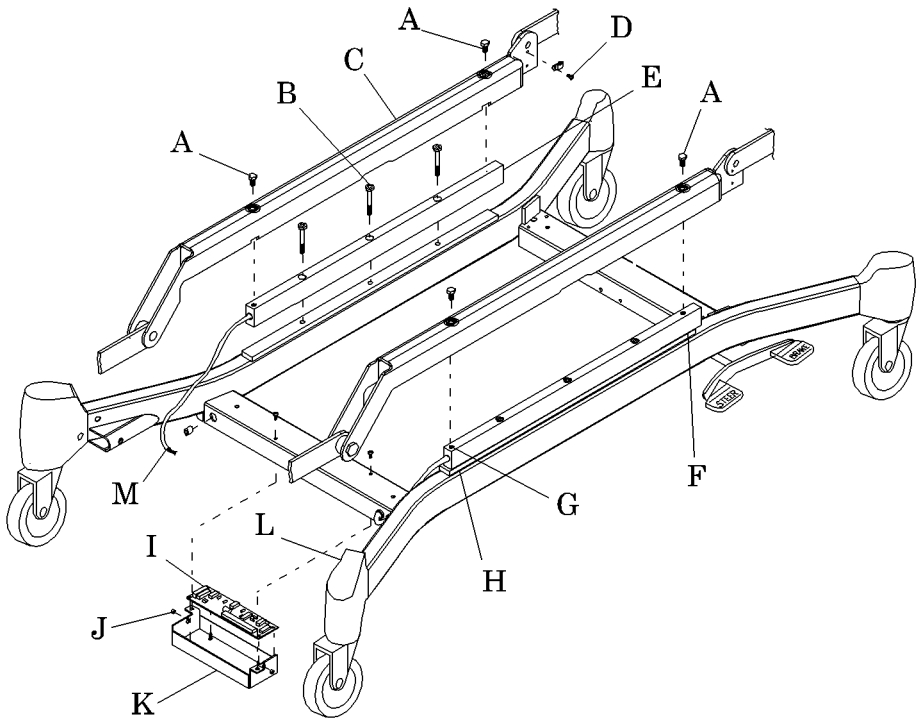
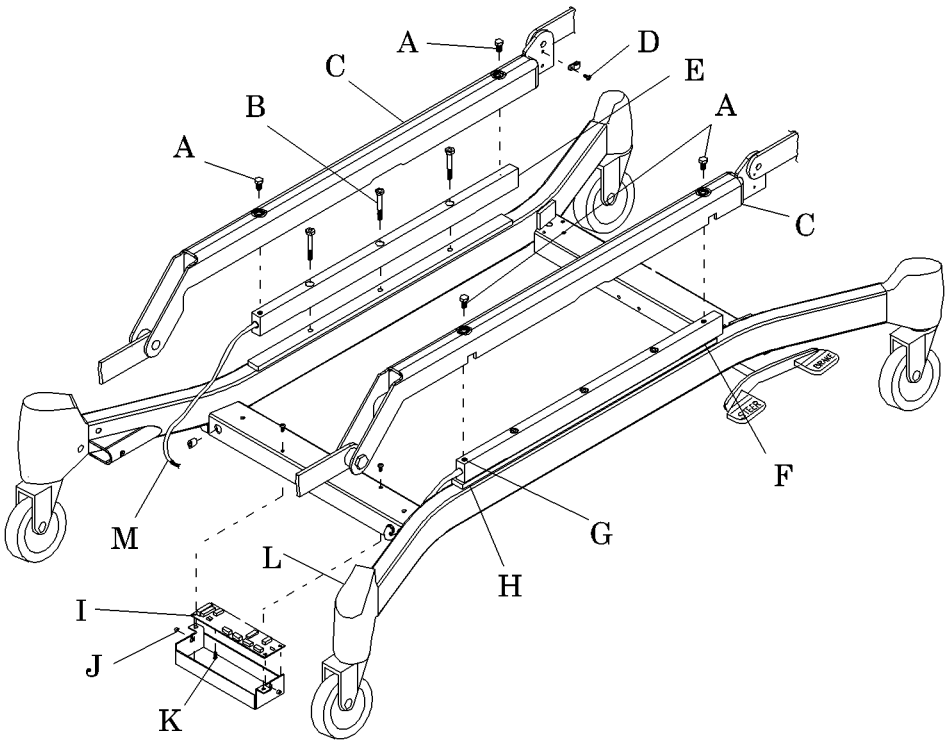


Figure 4-91. Removing/Installing Load Cells—"F" Version Bed



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3. Remove the screws connecting the brake cables to the bed frame.

4. Use the nurse control down switch to lift the load cell covers (C) off the load cells (E).

WARNING:
Unplug the bed from its power source before removing the bolts connecting the load cell to the base frame. Switches may become activated, causing the bed to operate without warning and cause personal injury.

5. Unplug the bed from its power source.

6. Remove the three allen head bolts (B) connecting the load cell (E) to the base frame (L).

7. Remove the strain relief (M) holding the load cell cable to the front channel.

8. Remove the two screws holding the analog board (I) to the front channel.

9. Use pliers to remove the analog board (I) from the standoffs (K)

10. Remove the wire connections from the analog board for the load cell being removed. The load cell can now be removed.

Replacement

1. Use the allen head bolts (B) to install the replacement load cell to the bed frame.

2. Starting with the center allen head bolt, tighten the allen bolts to 225 in-lb torque.

3. Adjust the overload stops using a feeler gauge. Adjust the 5/32" allen head screw at each end of the load cell until the screw is 0.031" from the bed frame.

4. Apply Loctite to the overload stop to maintain adjustment.

5. Connect the load cell wires to the analog board (I).
   a. If “E” version and prior bed, the edge of the terminal block has letters corresponding to the first letter of the color wire lead to be connected to it.
   b. If “F” version bed, the connector is preinstalled.

6. Install the analog board assembly (I) to the standoffs (K). Install the bushing (J) on the end of the analog board cover. Ensure that the wires do not get pinched when replaced in the front channel.

7. Check all connectors to the analog board to ensure that they are tight. Install the analog board cover assembly on the front channel.

8. Install the strain relief (M) on the front channel pulling all slack cable out of the front channel.

9. Plug the bed power into its appropriate power source.

10. Lower the load cell covers (C) onto the load cells (E) carefully. Do not allow the covers to set on the load cells.

11. Install the load cell cover bolts (A).

12. Tighten the bolts to 250 in-lb torque.

13. Install the brake cable strain relief to the bed frame.

14. Raise the bed and remove the jack stands.

15. Calibrate the scale before placing the bed back into service. See “Scale” on page 4-152.

Adjustment—Load Cell Overload Stop

Scale symptoms, such as the scale being out of calibration or erratic/no scale readings, indicate that the load beams need to be checked for adjustment or damage.

1. Check the overload stop adjustment using a feeler gauge with nothing in or on the bed. Slide the gauge under the overload stop to measure the head and foot gaps (F and H). The minimum and maximum gaps are as follows:
   a. Head end gap measurement (H) to be 0.021" (0.53 mm) minimum and 0.033" (0.84 mm) maximum.
   b. Foot end gap measurement (F) to be 0.014" (.34 mm) minimum and 0.032" (0.81mm) maximum.

2. If the adjustment is too loose, replace the load cell.

3. If the adjustment is too tight:
   a. Use a 5/32" allen wrench and back out the overload stops slightly.
   b. Insert a 0.031" (0.79 mm) feeler gauge and tighten the overload stop snug against it.
   c. Apply Loctite to the overload stop to maintain adjustment.

4.59 Scale

Tools required: None

Calibration

To ensure accurate system calibration, follow these steps with care. Perform calibration whenever one or more of the following conditions exist:

- One or both of the load cells have been removed or replaced.
- The analog board has been removed or replaced.
- The bed scale system is determined to be out of calibration.

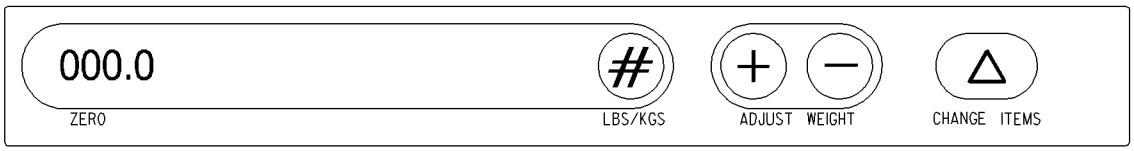
NOTE:
The person performing this procedure should accurately know his or her weight, or have a known weight of 100 lbs. to 200 lbs.

NOTE:
Any reference to a side of the bed is from the patient's view lying in the bed on his or her back.

Complete the following procedure at the foot end of the bed, at the nurse control panel.

1. Lower the bed to the weigh (low) position using the hilow function.
2. Ensure the scale is set to LBS. for weighing.
3. Press and hold the 000.0 switch (see figure 4-92 on page 4-152). The ZERO indicator will light and the weight display will indicate a flashing 000.0.

Figure 4-92. Bed Scale Display Area on Footboard Control Panel



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4. When the weight display indicates a continuous 000.0, press and hold the CHANGE ITEMS switch while continuing to hold the 000.0 switch. After a minimum of five seconds, release the 000.0 switch only. After a minimum of five seconds, release the CHANGE ITEMS switch.

5. If “E” version and prior bed:

    a. a single tone will sound and the weight display will indicate CALO. If “F” version bed, the weight display will indicate CALO (a tone will not sound).

NOTE:
Do not touch the bed during this procedure, as this can cause the calibration procedure to be inaccurate.

    b. After approximately 30 seconds, a short tone will sound, and an empty bed weight will be obtained.

    c. After approximately 30 seconds, two tones will sound, and the weight display will indicate CAL1. Place a known calibration weight of at least 100 lbs. on the patient’s left side of the bed, directly over the load beam.

    d. After approximately 30 seconds, a short tone will sound indicating a left calibration weight is obtained.

    e. After approximately 30 seconds, three tones will sound, and will indicate CAL2. Move the known calibration weight to the patient’s right side of the bed, directly over the load beam.

    f. After approximately 30 seconds, a short tone will sound, indicating a right calibration weight is obtained.

    g. After approximately 30 seconds, four tones will sound, and the weight display will indicate 100.0. Use the + and - switches to adjust the weight to the calibration weight.

NOTE:
If the known calibration weight is exactly 100.0 lbs., adjust the weight up or down slightly and back to 100.0 lbs.

    h. When the correct weight is displayed, wait 20 seconds and the scale control will reset.

    i. Remove all weight from the bed and ZERO the scale. Verify the calibration using the calibration weight.

6. If “F” version bed:

    a. The weight display will indicate CALO.

    b. An empty bed weight will be displayed.

    c. After approximately 30 seconds, one tone will sound, and the weight display will indicate CAL1.

d. Place a known calibration weight of between 100 lbs. and 200 lbs. on the patient's left side of the bed, directly over the load beam.

e. After approximately 30 seconds, two short tones will sound and the display will indicate CAL2 (indicating a left calibration weight is obtained).

f. Remove the weight from the bed surface.

g. After approximately 30 seconds, three short tones will sound and the display will indicate CAL3.

h. Place the known calibration weight of between 100 lbs. and 200 lbs. on the patient's right side of the bed, directly over the load beam.

i. After approximately 30 seconds, four tones will sound, and the weight display will indicate 100.0. Use the + and - switches to adjust the weight to the calibration weight (up to 200 lbs. maximum).

NOTE:
If the known calibration weight is exactly 100.0 lbs., adjust the weight up or down slightly and back to 100.0 lbs.

j. When the correct weight is displayed, press and release the CHANGE ITEMS button.

k. Verify the calibration using the calibration weight.

Chapter 5
Parts List

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5

Warranty

HILL-ROM® COMPANY, INC.
LIMITED WARRANTY

Hill-Rom Company, Inc. (Hill-Rom) has a long tradition of providing superior products and service to our customer. Our goal is "Total Customer Satisfaction". In that spirit, Hill-Rom is proud to offer the following warranty.

GENERAL WARRANTY (APPLICABLE UNLESS A SPECIFIC WARRANTY IS LISTED)

Hill-Rom warrants to the original purchaser that its products and replacement parts shall be free from defects in material and workmanship for a period of one (1) year from date of delivery. Hill-Rom's obligation under this warranty is expressly limited to supplying replacement parts and/or service for, or replacing, at its option, any product which is, in the sole discretion of Hill-Rom, found to be defective. In addition to the foregoing one year warranty, Hill-Rom warrants to the original purchaser that the frame and welds on its products will be free from structural defects for the life of the product. Any product upgrade or modification initiated by Hill-Rom does not affect the original product warranty.

SPECIFIC WARRANTIES

MATTRESS WARRANTIES

Hill-Rom warrants to the original purchaser that its mattress product shall be free from defects in material and workmanship for a period of two (2) years from date of delivery. However, electro mechanical mattress components (compressors, valves, printed circuit boards, hoses, and couplers) are covered by the general one (1) year warranty.

EXPENDABLES WARRANTIES

A sixty (60) day limited warranty from date of delivery applies to expendable parts such as cushions, coverlets, software diskettes, locator badge batteries, dome light incandescent bulbs, overhead fluorescent tubes, heating elements, temperature probes, filter sheets, and microspheres. This warranty is limited to replacement of the parts covered.

TO OBTAIN PARTS AND SERVICE

In the United States, call Hill-Rom Technical Support Department at (800) 445-3720, Monday through Friday. In Canada, call Hill-Rom Technical Support Department at (800) 267-2337, Monday through Friday. Outside the United States and Canada, call your authorized Hill-Rom Distributor. In order to expedite service, we request you furnish the following information: customer identification number, product model number, serial number, and description of problem. A qualified specialist will provide, via telephone (United States and Canada), or FAX (Outside the United States and Canada), troubleshooting assistance for facility personnel and provide necessary parts to make repairs. If troubleshooting determines the need for on-site technical service, a qualified service representative will be dispatched. Replacement of non-technical items will be the responsibility of the customer. If requested by Hill-Rom, products or parts for which a warranty claim is made shall be returned prepaid to Hill-Rom's factory.

OUT OF WARRANTY EXCHANGE POLICY

After the expiration of the original warranty, upon request, Hill-Rom will ship as a replacement, components such as selected: motors and printed circuit boards, for like units returned to Hill-Rom by the original purchaser at a substantial savings. Please call Hill-Rom Technical Support Department for current pricing.

PARTS AVAILABILITY POLICY

Hill-Rom will offer parts for new and remanufactured products for ten (10) years from date of sale; for communications products for five (5) years from date of sale.

Note: Some original component parts and assemblies may not be available; functional equivalents may be substituted.

THE FOREGOING WARRANTIES ARE EXCLUSIVE AND IN LIEU OF ALL OTHER EXPRESS WARRANTIES AND IMPLIED WARRANTIES, INCLUDING BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS OF PURPOSE. HILL-ROM'S OBLIGATION UNDER THESE WARRANTIES SHALL NOT INCLUDE ANY LIABILITY FOR LOSS OF PROFITS, DIRECT, INDIRECT OR CONSEQUENTIAL DAMAGES OR DELAYS. Some states, provinces, or countries do not allow the exclusion or limitation of incidental or consequential damages, so the above exclusion or limitation may not apply. Any improper or negligent use, any alterations or repairs not in accordance with Hill-Rom's manuals or performed by others in such manner as in Hill-Rom's sole judgment affects the product materially and adversely, shall void these warranties. These warranties do not cover failures due to misuse, abuse, neglect, or lack of routine maintenance. No employee or representative of Hill-Rom is authorized to change these warranties in any way or grant any other warranty unless in writing and signed by a Hill-Rom officer. These warranties provide specific legal rights; but, there may be other available rights, which vary from state to state, province to province, or country to country.

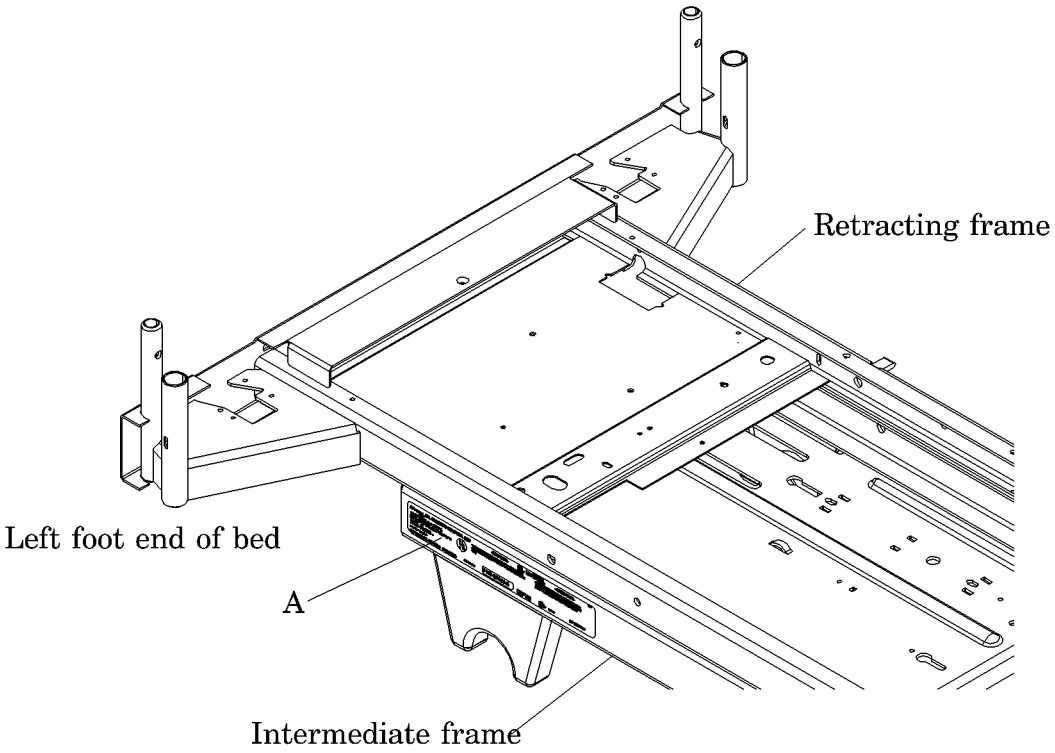
Revised April 17, 1997

NOTES:

Ordering Service Parts

Using the parts lists in this manual, identify the part number(s) you require. Find the product number and serial number on the product identification label (A) (see figure 5-1 on page 5-7).

Figure 5-1. Product Identification Label Location



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Call Hill-Rom Technical Support at (800) 445-3720 with the following information:

- Six-digit customer account number
- Purchase order number
- Product number
- Serial number
- Part number(s)

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Hill-Rom also provides a fax number to promptly order parts, request part prices and availability, or to follow up on a service order. This fax number is (812) 934-8472.

To order parts, a $40.00 minimum will prevent a charge for processing your order.

Terms:

- Net 30 days
- F.O.B. Batesville, IN
- Prepaid shipping charges added to invoice
- All orders shipped UPS ground unless specified

Address all inquiries to:

ATTN TECHNICAL SUPPORT—PARTS
HILL-ROM COMPANY
1069 STATE ROUTE 46 E
BATESVILLE IN 47006-9167

Address all return goods to:

ATTN SERVICE STORES
DISTRIBUTION CENTER DOOR D23
HILL-ROM COMPANY
COUNTY ROAD 300E
BATESVILLE IN 47006-9167

NOTE:
To eliminate possible delays or incorrect billings, **do not** return any items without a Return Material Authorization (RMA) number. When a return is requested, an RMA packet is included with each order. This packet includes an RMA number, instructions, and a shipping label. If an RMA number is not available, obtain one by phoning Hill-Rom Technical Support at (800) 445-3720.

Exchange Policy

The following are Hill-Rom's policies for in-warranty and out-of-warranty exchanges.

In-Warranty Exchanges

In some cases, Hill-Rom will request that parts/products be returned for inspection. When this occurs, you are expected to return parts/products within 30 days of receipt of the exchange part. If you fail to return the inoperative parts/products within the 30 day period, Hill-Rom will invoice your facility for the full selling price of the parts/products.

NOTE:
The preceding billing procedure pertains **only** to parts/products that Hill-Rom requests to be returned.

In some cases, the invoice accompanying the parts will show the full selling price (only for Hill-Rom's internal use). Do not confuse this price with your price.

Do not return any parts without an RMA number. When parts/products have been requested to be returned, Hill-Rom will include an RMA packet with the parts/products shipment. If an RMA number is not available, obtain one by phoning Hill-Rom Technical Support at (800) 445-3720.

Out-of-Warranty Exchanges

You are expected to return the inoperative parts/product within 30 days of receipt of the exchange part. Hill-Rom will include an RMA packet with the parts/products shipment. If an RMA number is not available, obtain one by phoning Hill-Rom Technical Support at (800) 445-3720. If you fail to return the equipment within 30 days, Hill-Rom will invoice your facility for **the difference between the exchange price and the new price of the part**.

Recommended Spare Parts

See table 5-1 on page 5-10 for recommended spare parts list to service 50 beds or more. See table 5-2 on page 5-11 through table 5-22 on page 5-21 for additional recommended spare parts for specific model beds.

Table 5-1. Recommended Spare Parts

Part Number	Qty.	Description
43381 (1000)	2	Head switch housing assembly
43383 (1000)	2	Knee switch housing assembly
45751 (1000)	1	Hilow foot switch housing assembly
45750 (1000)	1	Hilow head switch housing assembly
36250 (1000)	4	Coupling assembly
SA1551 (1000)	1	Miscellaneous hardware kit (all beds)
38566 (1000)	4	End cane (foot siderail and head siderail)
38569 (1000)	2	Top cane foot (siderail)
38567 (1000)	2	Top cane head (siderail)
38570 (1000)	2	Control housing cover
38827 (1000)	1	Touch-up paint (aerosol can), light neutral
45642 (1000)	10	Ribbed insert, 1"
420300 (1000)	1	Siderail tool—label product
SA0914 (1000)	1	Latch cover, pushnut
32572 (1000)	20	Screw
44647 (1000)	1	Junction box assembly
42845 (1000)	2	Lift nut
43702 (1000)	2	Switch slide
SA1561 (1000)**	1	Torx bits (includes T10, T25, and T45)
Choose the following parts based upon voltage requirements (i.e. 115 or 230 volt model beds).		
43369 (1000)	1	Hilow motor assembly (115 volt models)
43370 (1000)	1	Head motor assembly (115 volt models)
35000S (1000)	1	Universal motor assembly (115 volt models)

** This is a bit set only. It requires screwdriver handle P/N SA4180. The screwdriver handle can be ordered with the square tip set P/N SA1260. Check to ensure that you do not already have screwdriver handle.

Part Number	Qty.	Description
44529 (1000)	1	Hilow motor assembly (230 volt models)
44530 (1000)	1	Head motor assembly (230 volt models)
40459-01 (1000)	1	Knee motor assembly (230 volt models)

See table 5-2 on page 5-11 for a recommended spare parts list for the 115 and 230 volt model beds with the integrated air support system (models P1135 and P1136).

Table 5-2. Recommended Spare Parts for Advance Series Bed Models P1135 and P1136 (with Integrated Air Support System)

Part Number	Qty.	Description
44047 (1000)	2	P.C. board assembly
SA7099 (1000)	2	Ticking—P923CD/ED
38187 (1000)	2	Quick coupling—0.125 male
38189 (1000)	2	Quick coupling—0.250 male
39024 (1000)	2	Quick coupling—0.250 female
39027 (1000)	2	Quick coupling—0.125 female
43270 (1000)	1	Night light without scale
SA1554 (1000)	1	Door assembly—without scale unit
44158-01 (1000)	1	Logic control board assembly
Choose the following parts based upon voltage requirements (i.e. 115 or 230 volt model beds).		
42822-01 (1000)	1	High voltage power control board assembly (115 volt models)
42822-03 (1000)	1	High voltage power control board assembly (230 volt models)

See table 5-3 on page 5-12 for a recommended spare parts list for the 115 and 230 volt model beds with scale only (models P1115 and P1116).

Table 5-3. Recommended Spare Parts for Advance Series Bed Models P1115 and P1116 (with Scale Only)

Part Number	Qty.	Description
SA1555 (1000)	1	Door assembly (scale unit)
44158-02 (1000)	1	Logic control board assembly
Choose the following parts based upon voltage requirements (i.e. 115 or 230 volt model beds).		
42822-01 (1000)	1	High voltage control board assembly (115 volt models)
43200-01 (1000)	1	Night light with scale (115 volt models)
42822-03 (1000)	1	High voltage power control board assembly (230 volt models)
43200-02 (1000)	1	Night light board assembly (230 volt models)

See table 5-4 on page 5-12 for a recommended spare parts list for 115 and 230 volt model beds without scale and without the integrated air support system (models P1104, P1105, and P1106).

Table 5-4. Recommended Spare Parts for Advance Series Bed Models P1104, P1105, and P1106 (without Scale and Integrated Air Support System)

Part Number	Qty.	Description
SA1554 (1000)	1	Door assembly—without scale unit
48921 (1000)***	1	Night light without scale
44158-02 (1000)	1	Logic control board
Choose the following parts based upon voltage requirements (i.e. 115 or 230 volt model beds).		
42822-02 (1000)	1	High voltage control board assembly (115 volt models)
42822-03 (1000)	1	High voltage power control board assembly (230 volt models)

*** Not required for model P1104.

See table 5-5 on page 5-13 for a recommended spare parts list for 115 and 230 volt model beds with scale and with the integrated air support system (models P1145 and P1146).

Table 5-5. Recommended Spare Parts for Advance Series Bed Models P1145 and P1146 (with Scale and Integrated Air Support System)

Part Number	Qty.	Description
44047 (1000)	2	P.C. board assembly
SA7099 (1000)	2	Top foam and ticking—P923CD/ED
38187 (1000)	2	Quick coupling—0.125 male
38189 (1000)	2	Quick coupling—0.250 male
39024 (1000)	2	Quick coupling—0.250 female
39027 (1000)	2	Quick coupling—0.125 female
42822-01 (1000)	2	High voltage power control board assembly
SA1555 (1000)	1	Door assembly (scale unit)
44158-01 (1000)	1	Logic control board assembly
Choose the following parts based upon voltage requirements (i.e. 115 or 230 volt model beds).		
43200-01 (1000)	1	Night light with scale (115 volt models)
43200-02 (1000)	1	Night light board assembly (230 volt models)

See table 5-6 on page 5-14 through table 5-10 on page 5-15 for recommended spare parts lists for the siderails used on the "A" version 115 and 230 volt model beds. Note the siderail ID number and its description for assistance in identification.

Table 5-6. Recommended Spare Parts for Siderail on "A" Version Advance Series Bed Models

Siderail ID Number 53 (Includes bed functions, nurse call, entertainment, and lighting)		
Part Number	**Qty.**	**Description**
44196-01 (1000) **or** 44196-04 (1000)	2 2	Patient control panel (bed with air) Patient control panel (bed without air)
44195-01 (1000) **or** 44195-04 (1000)	2 2	Patient control panel (bed with air) Patient control panel (bed without air)
44119-01 (1000)	2	Outer control panel assembly
42684 (1000)	10	Volume knob

Table 5-7. Recommended Spare Parts for Siderail on "A" Version Advance Series Bed Models

Siderail ID Number 54 (Includes bed functions, nurse call, entertainment, and bed exit)		
Part Number	**Qty.**	**Description**
44196-02 (1000) **or** 44196-05 (1000)	2 2	Patient control panel (bed with air) Patient control panel (bed without air)
44195-02 (1000) **or** 44195-05 (1000)	2 2	Patient control panel (bed with air) Patient control panel (bed without air)
44119-01 (1000)	2	Outer control panel assembly
42684 (1000)	10	Volume knob

Table 5-8. Recommended Spare Parts for Siderail on "A" Version Advance Series Bed Models

Siderail ID Number 55 (Includes bed functions, nurse call, entertainment, bed exit, and lighting)		
Part Number	**Qty.**	**Description**
44196-01 (1000) **or** 44196-04 (1000)	2 2	Patient control panel (bed with air) Patient control panel (bed without air)
44195-01 (1000) **or** 44195-04 (1000)	2 2	Patient control panel (bed with air) Patient control panel (bed without air)
44119-01 (1000)	2	Outer control panel assembly
42684 (1000)	10	Volume knob

Table 5-9. Recommended Spare Parts for Siderail on "A" Version Advance Series Bed Models

Siderail ID Number 56 (Includes bed functions, nurse call, and bed exit)		
Part Number	**Qty.**	**Description**
44196-02 (1000) **or** 44196-05 (1000)	2 2	Patient control panel (bed with air) Patient control panel (bed without air)
44195-02 (1000) **or** 44195-05 (1000)	2 2	Patient control panel (bed with air) Patient control panel (bed without air)
44119-01 (1000)	2	Outer control panel assembly

Table 5-10. Recommended Spare Parts for Siderail on "A" Version Advance Series Bed Models

Siderail ID Number 59 (Includes bed functions and future options)		
Part Number	**Qty.**	**Description**
44196-03 (1000) **or** 44196-06 (1000)	2 2	Patient control panel (bed with air) Patient control panel (bed without air)
44195-03 (1000) **or** 44195-06 (1000)	2 2	Patient control panel (bed with air) Patient control panel (bed without air)
44119-02 (1000)	2	Outer control panel assembly with ac

See table 5-11 on page 5-16 through table 5-16 on page 5-18 for recommended spare parts lists for the siderails used on the "B" version 115 and 230 volt model beds. Note the siderail ID number and its description for assistance in identification.

Table 5-11. Recommended Spare Parts for Siderail on "B" Version Advance Series Bed Models

Siderail ID Number 52 (Includes bed functions, nurse call, and entertainment)		
Part Number	**Qty.**	**Description**
44635-03 (1000) **or** 44635-09 (1000)	2 2	Patient control assembly—lh (bed with air) Patient control assembly—lh (bed without air)
44635-04 (1000) **or** 44635-10 (1000)	2 2	Patient control assembly—rh (bed with air) Patient control assembly—rh (bed without air)
44119-01 (1000)	2	Outer control panel assembly
42684 (1000)	10	Volume knob

Table 5-12. Recommended Spare Parts for Siderail on "B" Version Advance Series Bed Models

Siderail ID Number 53 (Includes bed functions, nurse call, entertainment, and lighting)		
Part Number	**Qty.**	**Description**
44635-01 (1000) **or** 44635-07 (1000)	2 2	Patient control assembly—lh (bed with air) Patient control assembly—lh (bed without air)
44635-02 (1000) **or** 44635-08 (1000)	2 2	Patient control assembly—rh (bed with air) Patient control assembly—rh (bed without air)
44119-01 (1000)	2	Outer control panel assembly
42684 (1000)	10	Volume knob

Table 5-13. Recommended Spare Parts for Siderail on "B" Version Advance Series Bed Models

Siderail ID Number 54 (Includes bed functions, nurse call, entertainment, and bed exit)		
Part Number	**Qty.**	**Description**
44635-03 (1000) **or** 44635-09 (1000)	2 2	Patient control assembly—lh (bed with air) Patient control assembly—lh (bed without air)
44635-04 (1000) **or** 44635-10 (1000)	2 2	Patient control assembly—rh (bed with air) Patient control assembly—rh (bed without air)
44119-01 (1000)	2	Outer control panel assembly
42684 (1000)	10	Volume knob

Table 5-14. Recommended Spare Parts for Siderail on "B" Version Advance Series Bed Models

Siderail ID Number 55 (Includes bed functions, nurse call, entertainment, bed exit, and lighting)		
Part Number	**Qty.**	**Description**
44635-01 (1000) **or** 44635-07 (1000)	2 2	Patient control assembly—lh (bed with air) Patient control assembly—lh (bed without air)
44635-02 (1000) **or** 44635-08 (1000)	2 2	Patient control assembly—rh (bed with air) Patient control assembly—rh (bed without air)
44119-01 (1000)	2	Outer control panel assembly
42684 (1000)	10	Volume knob

Table 5-15. Recommended Spare Parts for Siderail on "B" Version Advance Series Bed Models

Siderail ID Number 56 (Includes bed functions, nurse call, and bed exit)		
Part Number	**Qty.**	**Description**
44635-03 (1000)	2	Patient control assembly—lh (bed with air)
		or
44635-09 (1000)	2	Patient control assembly—lh (bed without air)
44635-04 (1000)	2	Patient control assembly—rh (bed with air)
		or
44635-10 (1000)	2	Patient control assembly—rh (bed without air)
44119-01 (1000)	2	Outer control panel assembly

Table 5-16. Recommended Spare Parts for Siderail on "B" Version Advance Series Bed Models

Siderail ID Number 59 (Includes bed functions and future options)		
Part Number	**Qty.**	**Description**
44635-05 (1000)	2	Patient control assembly—lh (bed with air)
		or
44635-11 (1000)	2	Patient control assembly—lh (bed without air)
44635-06 (1000)	2	Patient control assembly— rh (bed with air)
		or
44635-12 (1000)	2	Patient control assembly—rh (bed without air)
44119-02 (1000)	2	Outer control panel assembly

See table 5-17 on page 5-19 through table 5-22 on page 5-21 for recommended spare parts lists for the siderails used on the "B" version 115 and 230 volt model beds. Note the siderail ID number and its description for assistance in identification.

Table 5-17. Recommended Spare Parts for Siderail on "C" Version Advance Series Bed Models

Siderail ID Number 52 (Includes bed functions, nurse call, and entertainment)		
Part Number	**Qty.**	**Description**
45078-03 (1000)	2	Patient control assembly—lh (bed with air)
		or
45078-09 (1000)	2	Patient control assembly—lh (bed without air)
45078-04 (1000)	2	Patient control assembly—rh (bed with air)
		or
45078-10 (1000)	2	Patient control assembly—rh (bed without air)
44668-04 (1000)	1	Outer control panel assembly
44668-03 (1000)	1	Outer control panel assembly
42684 (1000)	10	Volume knob

Table 5-18. Recommended Spare Parts for Siderail on "C" Version Advance Series Bed Models

Siderail ID Number 53 (Includes bed functions, nurse call, entertainment, and lighting)		
Part Number	**Qty.**	**Description**
45078-01 (1000)	2	Patient control assembly—lh (bed with air)
		or
45078-07 (1000)	2	Patient control assembly—lh (bed without air)
45078-02 (1000)	2	Patient control assembly—rh (bed with air)
		or
45078-08 (1000)	2	Patient control assembly—rh (bed without air)
44668-04 (1000)	1	Outer control panel assembly
44668-03 (1000)	1	Outer control panel assembly
42684 (1000)	10	Volume knob

Table 5-19. Recommended Spare Parts for Siderail on "C" Version Advance Series Bed Models

Siderail ID Number 54 (Includes bed functions, nurse call, entertainment, and bed exit)		
Part Number	**Qty.**	**Description**
45078-03 (1000) **or** 45078-09 (1000)	2 2	Patient control assembly—lh (bed with air) Patient control assembly—lh (bed without air)
45078-04 (1000) **or** 45078-10 (1000)	2 2	Patient control assembly—rh (bed with air) Patient control assembly—rh (bed without air)
44668-04 (1000)	1	Outer control panel assembly
44668-03 (1000)	1	Outer control panel assembly
42684 (1000)	10	Volume knob

Table 5-20. Recommended Spare Parts for Siderail on "C" Version Advance Series Bed Models

Siderail ID Number 55 (Includes bed functions, nurse call, entertainment, bed exit, and lighting)		
Part Number	**Qty.**	**Description**
45078-01 (1000) **or** 45078-07 (1000)	2 2	Patient control assembly—lh (bed with air) Patient control assembly—lh (bed without air)
45078-02 (1000) **or** 45078-08 (1000)	2 2	Patient control assembly—rh (bed with air) Patient control assembly—rh (bed without air)
44668-04 (1000)	1	Outer control panel assembly
44668-03 (1000)	1	Outer control panel assembly
42684 (1000)	10	Volume knob

Table 5-21. Recommended Spare Parts for Siderail on "C" Version Advance Series Bed Models

Siderail ID Number 56 (Includes bed functions, nurse call, and bed exit)		
Part Number	**Qty.**	**Description**
45078-03 (1000) 45078-09 (1000)	2 2	Patient control assembly—lh (bed with air) **or** Patient control assembly—lh (bed without air)
45078-04 (1000) 45078-10 (1000)	2 2	Patient control assembly—rh (bed with air) **or** Patient control assembly— rh (bed without air)
44668-04 (1000)	1	Outer control panel assembly
44668-03 (1000)	1	Outer control panel assembly

Table 5-22. Recommended Spare Parts for Siderail on "C" Version Advance Series Bed Models

Siderail ID Number 59 (Includes bed functions and future options)		
Part Number	**Qty.**	**Description**
45078-05 (1000) 45078-11 (1000)	2 2	Patient control assembly—lh (bed with air) **or** Patient control assembly—lh (bed without air)
45078-06 (1000) 45078-12 (1000)	2 2	Patient control assembly—rh (bed with air) **or** Patient control assembly—rh (bed without air)
44668-06 (1000)	1	Outer control panel assembly
44668-05 (1000)	1	Outer control panel assembly

Base Frame—Without Scale

Figure 5-2. Base Frame—Without Scale

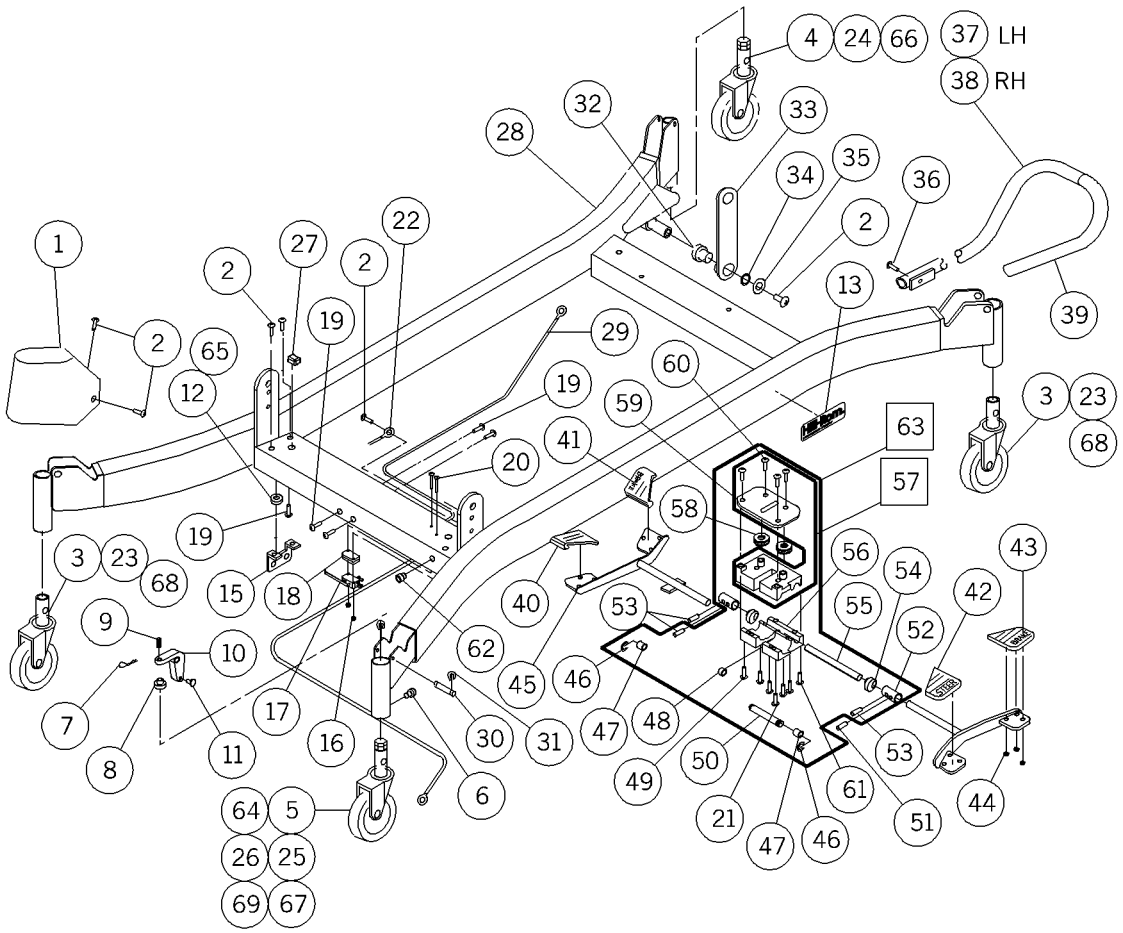

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Table 5-23. Base Frame—Without Scale

Item Number	Part Number	Quantity	Description
1	44100 (1000)	4	Leg cover
2	43878 (1000)	15	Torx button head screw
3	43840 (1000)	2	Caster (grey “A” and “B” version beds only)
4	43839 (1000)	1	Brake caster (grey “A” and “B” version beds only)
5	43838 (1000)	1	Brake/steer caster (grey “A” and “B” version beds only)
6	32572 (1000)	4	Screw
7	11094 (1000)	2	Cotter pin
8	44116 (1000)	2	Spacer
9	32425 (1000)	2	Setscrew
10	34715 (1000)	2	Rocker arm assembly
11	757 (1000)	2	Connector pin
12	18864 (1000)	2	Sheave
13	38776 (1000)	2	Base label
14			
15	18944 (1000)	2	Pedal bracket
16	20605 (1000)	2	Locknut
17	40723 (1000)	1	Logic switch
18	34401 (1000)	2	Spacer
19	43389 (1000)	5	Hilow torx screw
20	34402 (1000)	2	Screw
21	43879 (1000)	1	Torx button head screw
22	4565818 (1000)	1	Ground strap
23	45084-50 (1000) or 45084-60 (1000) or 45084-40 (1000)	2 2 2	Caster, swivel (5") (light neutral) Caster, swivel (6") (light neutral) Caster, steer (4") (light neutral)
24	45084-56 (1000) or 45084-66 (1000) or 45084-46 (1000)	1 1 1	Brake caster (5") (light neutral) Brake caster (6") (light neutral) Brake caster (4") (light neutral)

Item Number	Part Number	Quantity	Description
25	45084-54 (1000) or 45084-64 (1000) or 45084-44 (1000)	1 1 1	Brake/steer caster (5") (light neutral) Brake/steer caster (6") (light neutral) Brake/steer caster (4") (light neutral)
26	SA7081-48(1000)	4	5" urethane wheel only (light neutral)
27	44336 (1000) or 61992 (1000)	4 4	Base bumper (beds with snap action limit switches) Base bumper (beds with electromagnetic limit switches)
28	43374-01 (1000)	1	Base assembly—non-scale
29	35175 (1000)	1	Cable assembly
30	18862 (1000)	2	Pin
31	18890 (1000)	4	Tru-arc ring
32	18873 (1000)	2	Bushing
33	44291-48 (1000)	2	Pivot arm assembly
34	15907 (1000)	2	Lockwasher
35	18912 (1000)	2	Washer
36	90016-20 (1000)	2	Hex head machine bolt
37	44209-48 (1000)	1	Bumper assembly lh complete
38	44208-48 (1000)	1	Bumper assembly rh complete
39	34472-33 (1000)	2	Sleeve
40	34371 (1000)	1	Steer pedal rh (rh side of bed)
41	34370 (1000)	1	Brake pedal lh (rh side of bed)
42	34369 (1000)	1	Steer pedal lh (lh side of bed)
43	34368 (1000)	1	Brake pedal rh (lh side of bed)
44	29788 (1000)	12	Twist nut
45	32427-48 (1000)	2	Pedal assembly
46	12220 (1000)	2	Tru-arc ring
47	43844 (1000)	2	Bearing
48	18863 (1000)	1	Roller
49	42140 (1000)	4	Screw
50	43854 (1000)	1	Follower shaft
51	34325 (1000)	1	Roll pin
52	18859 (1000)	2	Coupling
53	9685 (1000)	3	Roll pin

Item Number	Part Number	Quantity	Description
54	43805 (1000)	2	Brake/steer cam
55	33360 (1000)	1	Cam shaft
56	42247 (1000)	1	Mechanism block—bottom
57	SA1157 (1000)	1	Block top, adapter, screw
58	18887 (1000)	2	Bearing
59	34516 (1000)	1	Stiffener plate
60	42142 (1000)	4	Pan head screw
61	42141 (1000)	2	Hilow screw
62	34311 (1000)	1	Heyco bushing
63	44043 (1000)	1	Mechanism assembly
64	SA7081 (1000)	4	5" urethane wheel only (grey “A” and “B” version beds only)
65	SA3351 (1000)	As required	Lithium grease
66	43842 (1000)	1	Brake caster (grey—model P1104 only)
67	43843 (1000)	1	Brake/steer caster (grey—model P1104 only)
68	43841 (1000)	2	Caster, swivel (grey—model P1104 only)
69	SA7082 (1000)	4	5" rubber wheel only (grey—model P1104 only)

Base Frame—With Scale

Figure 5-3. Base Frame—With Scale

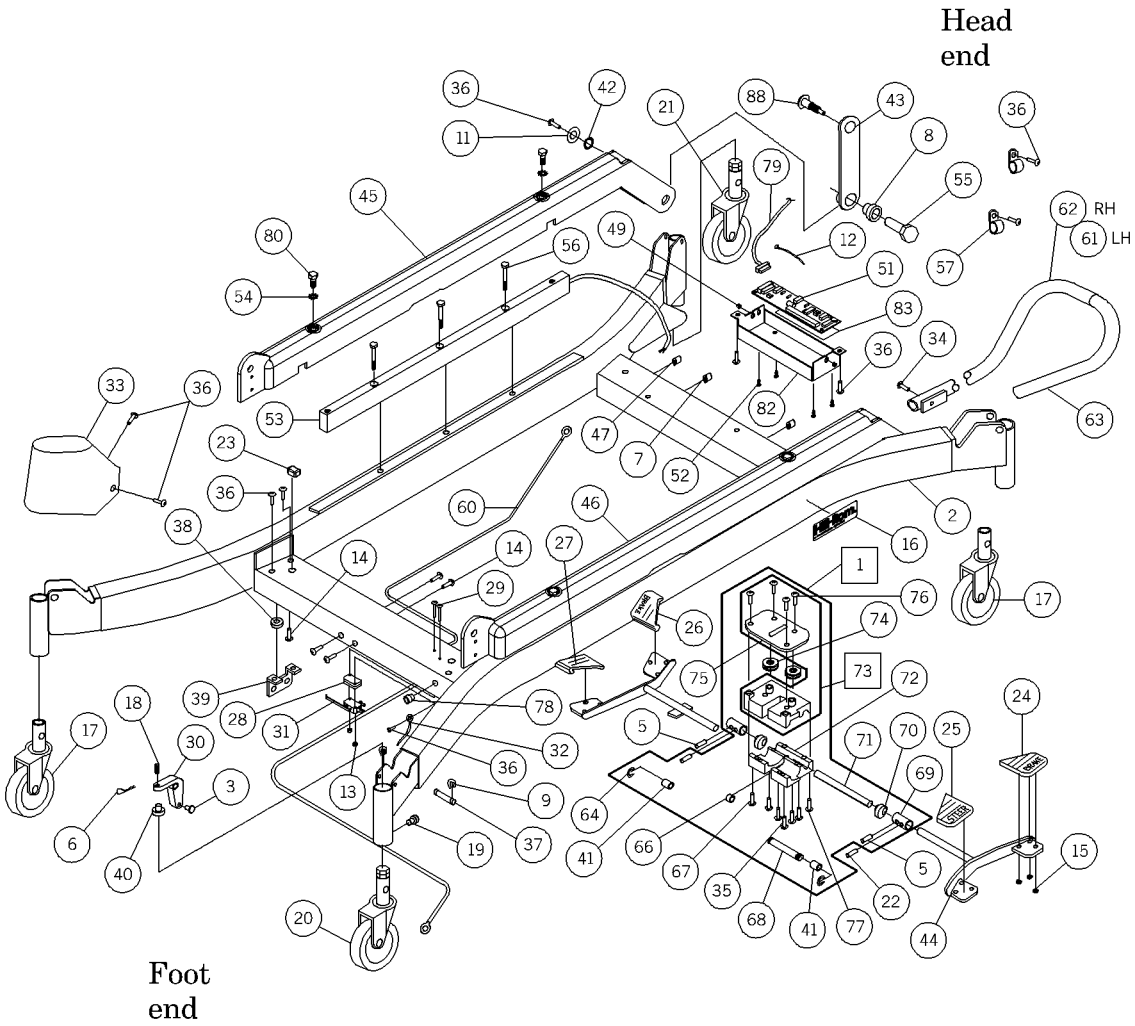

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Table 5-24. Base Frame—With Scale

Item Number	Part Number	Quantity	Description
1	44043 (1000)	1	Mechanism assembly
2	43374-02 (1000)	1	Base assembly—scale
3	757 (1000)	2	Connector pin
4			
5	9685 (1000)	3	Roll pin
6	11094 (1000)	2	Cotter pin
7	16145 (1000)	1	Strain relief
8	18873 (1000)	2	Bushing
9	18890 (1000)	4	Tru-arc ring
10	SA7081 (1000)	4	5" urethane wheel only (grey—“A” and “B” version beds only)
11	44783 (1000)	2	Washer
12	19124 (1000)	1	Large cable tie
13	20605 (1000)	2	Locknut
14	43389 (1000)	8	Hilow torx screw
15	29788 (1000)	12	Twist nut
16	38776 (1000)	2	Base label
17	43840 (1000)	2	Caster (grey—“A” and “B” version beds only
18	32425 (1000)	2	Setscrew
19	32572 (1000)	4	Screw
20	43838 (1000)	1	Brake/steer caster (grey—“A” and “B” version beds only)
21	43839 (1000)	1	Brake caster (grey—“A” and “B” version beds only)
22	34325 (1000)	1	Roll pin
23	44336 (1000) or 61992 (1000)	4 4	Base bumper (beds with snap action limit switches) Base bumper (beds with electromagnetic limit switches)
24	34368 (1000)	1	Brake pedal rh (lh side of bed)
25	34369 (1000)	1	Steer pedal lh (lh side of bed)
26	34370 (1000)	1	Brake pedal lh (rh side of bed)
27	34371 (1000)	1	Steer pedal rh (rh side of bed)
28	34401 (1000)	2	Spacer
29	34402 (1000)	2	Screw

Item Number	Part Number	Quantity	Description
30	34715 (1000)	2	Rocker arm assembly
31	40723 (1000)	1	Logic switch
32	4565818 (1000)	1	Ground strap
33	44100 (1000)	4	Leg cover
34	90016-20 (1000)	2	Hex head machine bolt
35	43879 (1000)	1	Torx button head screw
36	43878 (1000)	19	Torx button head screw
37	18862 (1000)	2	Pin
38	18864 (1000)	2	Sheave
39	18944 (1000	2	Pedal bracket
40	44116 (1000)	2	Spacer
41	43844 (1000)	2	Bearing
42	15907 (1000)	2	Lockwasher
43	44291-48 (1000)	2	Pivot arm assembly
44	32427-48 (1000)	2	Pedal assembly
45	44292 (1000)	1	Load cell cover—rh
46	44293 (1000)	1	Load cell cover—lh
47	22988 (1000)	2	Strain relief
48			
49	18148 (1000)	2	Snap bushing
50			
51	39369-01 (1000) 49751 (1000)	1 1	Analog board assembly—”E” version and prior bed Analog board assembly—”F” version bed
52	39763-02 (1000)	4	Standoff
53	39619 (1000) 3961901 (1000)	2 2	Load cell—”E” version and prior bed Load cell—”F” version bed
54	41370 (1000)	4	Lockwasher
55	39637 (1000)	2	Pivot pin
56	90161-28 (1000)	6	Cap screw
57	36114 (1000)	2	Cable tie with hole
58			
59			
60	35175 (1000)	1	Cable assembly
61	44209-48 (1000)	1	Bumper assembly lh complete

Item Number	Part Number	Quantity	Description
62	44208-48 (1000)	1	Bumper assembly rh complete
63	34472-33 (1000)	2	Sleeve
64	12220 (1000)	2	Tru-arc ring
65			
66	18863 (1000)	1	Roller
67	42140 (1000)	4	Screw
68	43854 (1000)	1	Follower shaft
69	18859 (1000)	2	Coupling
70	43805 (1000)	2	Brake/steer cam
71	33360 (1000)	1	Cam shaft
72	42247 (1000)	1	Mechanism block—bottom
73	SA1157 (1000)	1	Block top, adapter, screw
74	18887 (1000)	2	Bearing
75	34516 (1000)	1	Stiffener plate
76	42142 (1000)	4	Pan head screw
77	42141 (1000)	2	Hilow screw
78	34311 (1000)	1	Heyco bushing
79	43168 (1000)	1	Bed scale cable assembly
80	90016-12 (1000)	4	Hex head machine bolt
81			
82	43093 (1000)	1	Circuit board cover
83	42944 (1000)	1	Insulator
84	45084-50 (1000) or 45084-60 (1000) or 45084-40 (1000)	2 2 2	Caster, swivel (5") (light neutral) Caster, swivel (6") (light neutral) Caster, steer (4") (light neutral)
85	45084-56 (1000) or 45084-66 (1000) or 45084-46 (1000)	1 1 1	Brake caster (5") (light neutral) Brake caster (6") (light neutral) Brake caster (4") (light neutral)
86	45084-54 (1000) or 45084-64 (1000) or 45084-44 (1000)	1 1 1	Brake/steer caster (5") (light neutral) Brake/steer caster (6") (light neutral) Brake/steer caster (4") (light neutral)

Item Number	Part Number	Quantity	Description
87	SA7081-48 (1000)	4	5" urethane wheel only (light neutral)
88	43656-01 (1000	1	Shoulder bolt

NOTES:

Intermediate Frame Assembly

Figure 5-4. Intermediate Frame Assembly

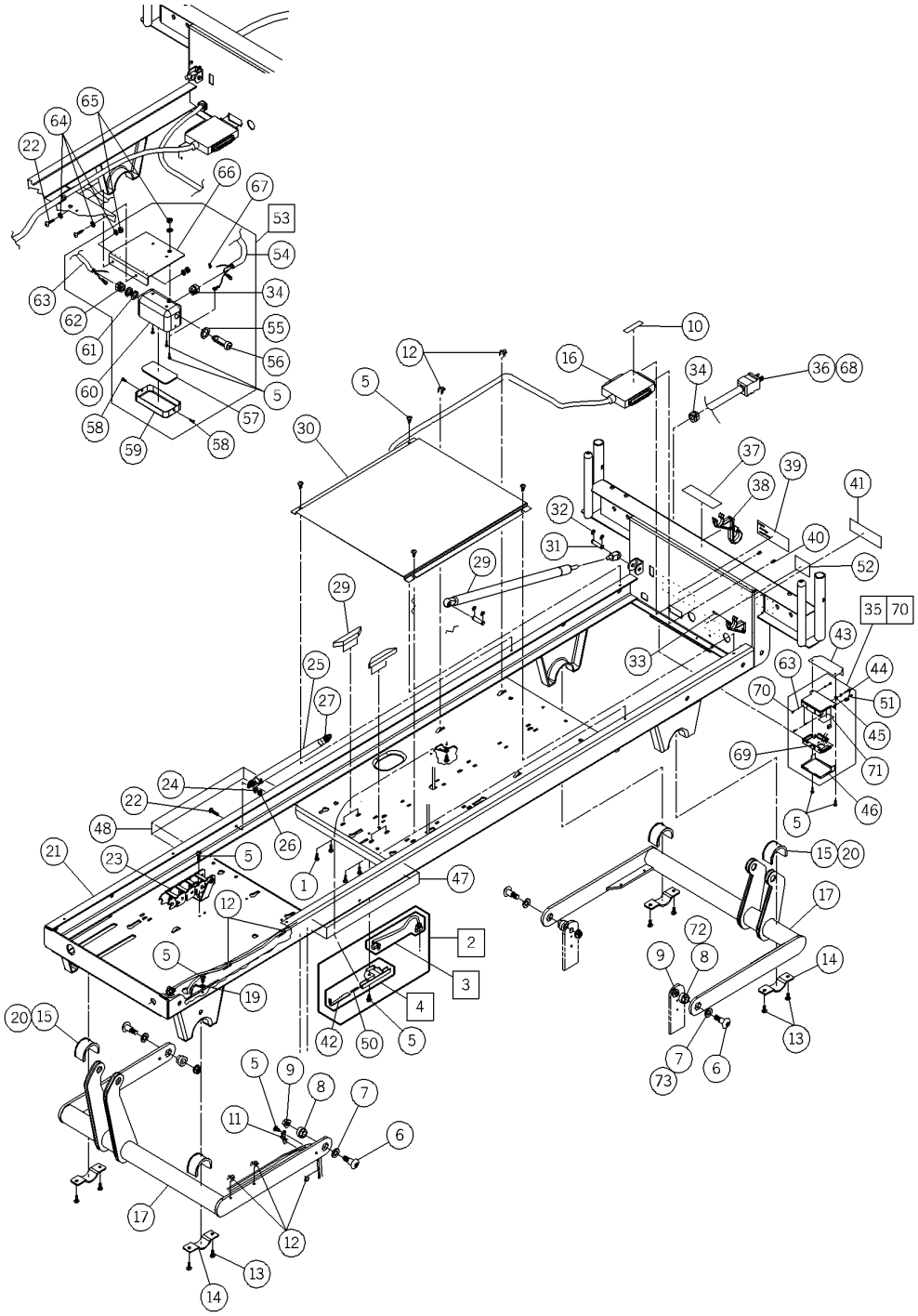

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Table 5-25. Intermediate FrameAssembly

Item Number	Part Number	Quantity	Description
1	43389 (1000)	11	Hilow torx screw
2	SA1597 (1000)	1	CPR switch housing assembly with screw
3	SA1559 (1000)	1	CPR switch assembly
4	43710 (1000)	1	Switch housing
5	43878 (1000)	17	Torx button head screw
6	43656 (1000)	4	Shoulder bolt
7	43989 (1000)	4	Washer (non-scale beds only)
8	43657 (1000)	4	Bushing—retracting arm (non-scale beds only)
9	43926 (1000)	4	Hex flange locknut
10	40776 (1000)	1	Label
11	36114 (1000)	1	Cable tie with hole
12	19124 (1000)	22	Large cable tie
13	44489 (1000)	8	Six lobe pan head screw
14	34721 (1000)	4	Retaining strap
15	19297 (1000)	4	Bushing
16	46204-01 (1000) or 6025101S (1000)	1 1	Testport cable assembly (4 pin tape switch connector) Testport cable assembly (6 pin tape switch connector)
17	43271 (1000)	2	Lift arm assembly
18			
19	35176 (1000)	1	Ground strap assembly
20	SA3351 (1000)	As required	Lithium grease
21	45752-48 (1000)	1	Intermediate frame weldment
22	43879 (1000)	8	Torx button head screw
23	43333-01 (1000) or 43333-02 (1000) or 6169501 (1000) or 6169502 (1000)	1 1 1 1	Ribbon carrier assembly (“A”, “B”, and “C” version beds only) Ribbon carrier assembly (for P1135—“A”, “B”, and “C” version beds only) Ribbon carrier assembly (“E” version beds with scale only) Ribbon carrier assembly (“E” version beds with scale and air only)
24	2449 (1000)	1	Washer
25	34806 (1000)	1	Tube

Item Number	Part Number	Quantity	Description
26	40497 (1000)	1	Keps nut
27	34805 (1000)	1	Extension spring
28	43658 (1000)	2	CPR guide
29	43363 (1000)	1	Dampener—CPR head section
30	43366-48 (1000)	1	Stationary head cover
31	43394 (1000)	2	Clevis pin
32	35325 (1000)	4	E-ring
33	19636 (1000)	2	Slotted spring pin
34	16145 (1000)	2	Strain relief
35	44647 (1000)	1	Junction box assembly (“A” and “B” version beds only)
36	27518 (1000) or 6245201 (1000)	1 1	Line cord cable assembly or Line cord cable assembly, molded
37	39252 (1000)	1	Label—caution trapeze
38	44154 (1000)	2	IV cord clip
39	39364 (1000)	1	Caution label
40	42006 (1000)	2	Screw lock
41	41659 (1000)	1	Grounding receptacle label
42	43712 (1000)	1	Actuator
43	38181-48 (1000)	1	Protector—junction box
44	345121 (1000)	1	Dummy plug
45	38349 (1000)	1	Junction box—top
46	38673 (1000)	1	Junction box—bottom
47	43674-48 (1000)	1	Head elevation label—lh
48	43673-48 (1000)	1	Head elevation label—rh
49	947 (1000)	10	Lockwasher, internal (“C” version beds only)
50	43711 (1000)	1	Spring
51	4759 (1000)	4	Screw
52	44369 (1000)	1	Manual crank caution label
53	44495 (1000)	1	Power cord J-box assembly—230V
54	44343 (1000)	1	Cord set assembly
55	35762 (1000)	1	Gasket
56	44507 (1000)	1	Circuit breaker—8 amp
57	22318 (1000)	1	Rubber gasket

Item Number	Part Number	Quantity	Description
58	22605 (1000)	2	Screw
59	22319 (1000)	1	Box cover
60	44497 (1000)	1	Junction box
61	22320 (1000)	2	Gasket strain relief
62	35773 (1000)	1	Strain relief
63	44496 (1000)	1	Intermediate cord
64	15907 (1000)	4	Lockwasher
65	28837 (1000)	3	Hex nut
66	44338-48 (1000)	1	Mounting bracket
67	32741 (1000)	1	Wire joint
68	18829 (1000)	1	Plug (230 volt models)
69	45588-02 (1000)	1	Junction box P.C. assembly (“C” version beds only)
70	45591-48 (1000)	1	Junction box assembly (“C” version beds only)
71	28850 (1000)	1	Insulator
72	45013 (1000)	4	Hex bushing (scale beds only)
73	45014 (1000)	4	Washer (nylon) (scale beds only)

Electronics Pan Assembly

Figure 5-5. Electronics Pan Assembly

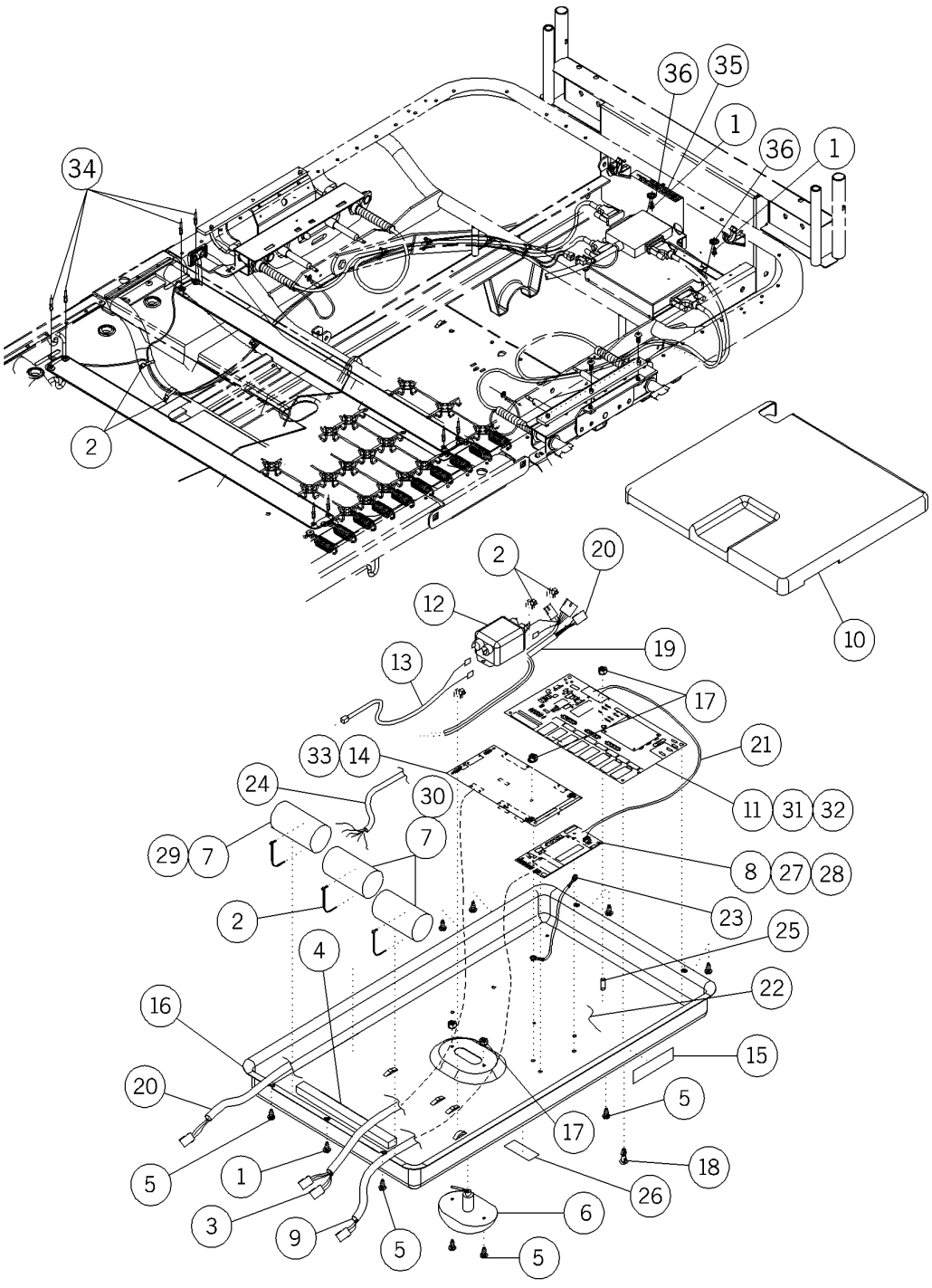

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Table 5-26. Electronics Pan Assembly

Item Number	Part Number	Quantity	Description
1	43878 (1000)	3	Torx button head screw
2	19124 (1000)	5	Large cable tie
3	43173 (1000)	1	Brake switch cable
4	44113 (1000)	7.5	Gasket
5	43879 (1000)	8	Torx button head screw
6	43166 (1000)	1	Night light assembly
7	43025-01 (1000)	3	Motor capacitor (115 volt models)
8	43200-01 (1000)	1	Night light with scale (115 volt models)
9	43671 (1000)	1	Night light sensor and cable assembly
10	44093 (1000)	1	Splash cover
11	42822-01 (1000)	1	HV/power control board assembly (models P1115/P1135/P1145)
12	41439-10 (1000)	1	Noise filter
13	43165-01 (1000)	1	Power cord assembly with scale
14	44158-01 (1000) or 44158-02 (1000) or 44158-06 (1000) or 6141002 (1000)	1 1 1 1	Logic control board assembly (for P1104/ P1106/P1116/P1135/P1136/P1145/P1146—“A”, “B”, and “C” version beds only) Logic control board assembly (for P1105/ P1115/P1155/P1165—“A”, “B”, and “C” version beds only) Logic control board assembly (for P1163—“A”, “B”, and “C” version beds) Logic control board assembly (for “E”and “F” version beds with scale and air, “E” and “F” version beds with scale only, and “E” and “F” version beds with air only)
15	43412 (1000)	1	Night light label
16	4753648 (1000)		Electronics pan
17	28837 (1000)	1	Hex nut
18	39763-02 (1000)	3	Standoff
19	43164-01 (1000)	13	Power cord
20	43171 (1000)	1	Drive limit cable assembly
21	43291 (1000)	1	Night light power—without scale
22	44091 (1000)	1	Electronics pan insulator
23	39240-01 (1000)	1	Ground strap
24	SA1560 (1000)	1	Capacitor cable assembly

Item Number	Part Number	Quantity	Description
25	43328 (1000)	2	Standoff
26	22247 (1000)	1	Caution label
27	48921 (1000)	1	Night light assembly without scale
28	43200-02 (1000)	1	Night light board assembly (230 volt models)
29	43610-01 (1000)	1	Motor capacitor (230 volt models)
30	44532 (1000)	2	Motor capacitor (230 volt models)
31	42822-02 (1000)	1	HV/power control board assembly (P1104 and P1105 models only)
32	42822-03 (1000)	1	HV/power/control board assembly (230 volt models)
33	44158-05 (1000)	1	Logic control board assembly (P1105 and P1115 models only—“A”, “B”, and “C” version beds only)
34	36790 (1000)	8	Drive rivet (bed exit models only)
35	34778 (1000)	1	Caution label
36	15907 (1000)	2	Lockwasher

NOTES:

Retracting Frame Assembly

Figure 5-6. Retracting Frame Assembly

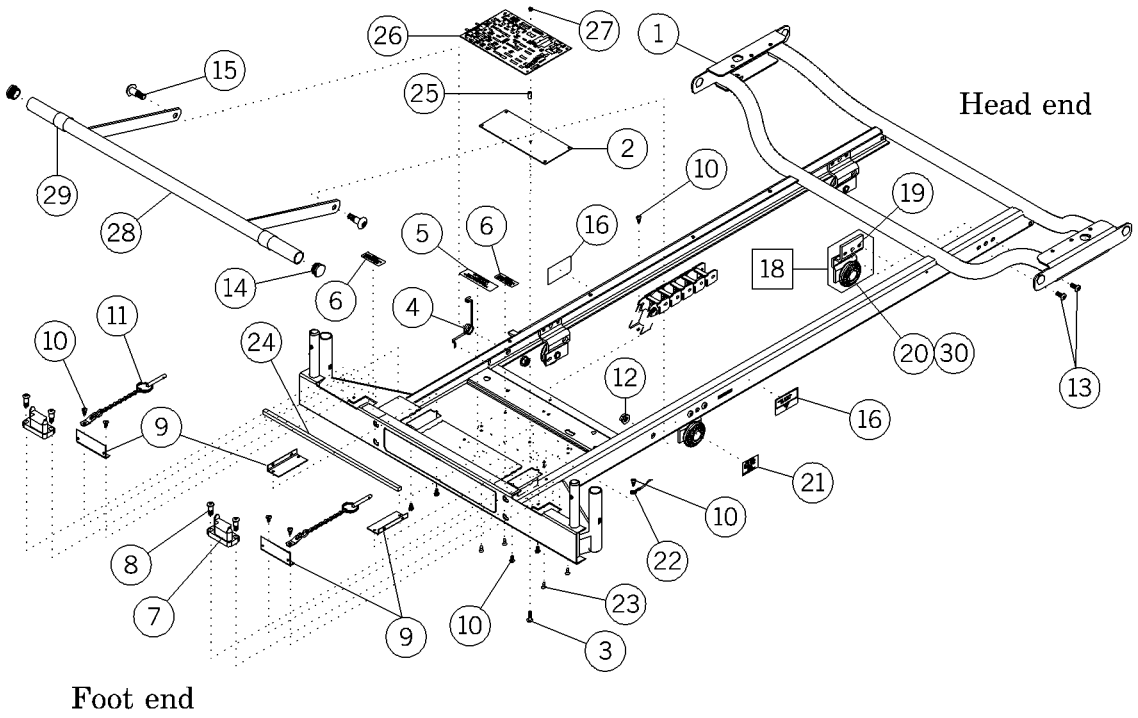

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Table 5-27. Retracting Frame Assembly

Item Number	Part Number	Quantity	Description
1	43349-48 (1000)	1	Retracting frame assembly
2	44101 (1000)	1	Insulator—air control box
3	43879 (1000)	8	Torx button head screw
4	19528 (1000)	1	Spring—rh
5	34763 (1000)	1	Label
6	42506 (1000)	2	Cleaning caution label
7	40001 (1000)	2	Plug housing
8	43726 (1000)	4	Shoulder screw—truss, torx
9	43748PL (1000)	4	Upper connector cover
10	43878 (1000)	27	Torx button head screw
11	40210 (1000)	2	Release pin assembly
12	43926 (1000)	12	Hex flange locknut
13	43880 (1000)	8	Torx pan head screw
14	45642 (1000)	2	Ribbed insert
15	43656 (1000)	2	Shoulder bolt
16	19943-48 (1000)	2	Elevation pointer label
17			
18	SA1680 (1000)	4	Roller bracket assembly (with roller)
19	44075 (1000)	4	Roller bracket assembly
20	34922 (1000)	4	Roller
21	31087 (1000)	1	Patent label
22	35176 (1000)	1	Ground strap assembly
23	39763-02 (1000)	4	Standoff
24	40889 (1000)	1	Gasket
25	43328 (1000)	4	Standoff
26	44047 (1000) or 46752 (1000) (post 11/30/95)	1 1	P.C. board assembly (DynamicAire Sleep Surface models only) Air board assembly
27	28837 (1000)	1	Hex nut
28	43707-48 (1000)	1	Foot rack assembly
29	39246 (1000)	2	Protective tape
30	SA3351 (1000)	As required	Lithium grease

Upper Frame/Sleep Surface Assembly

Figure 5-7. Upper Frame/Sleep Surface Assembly

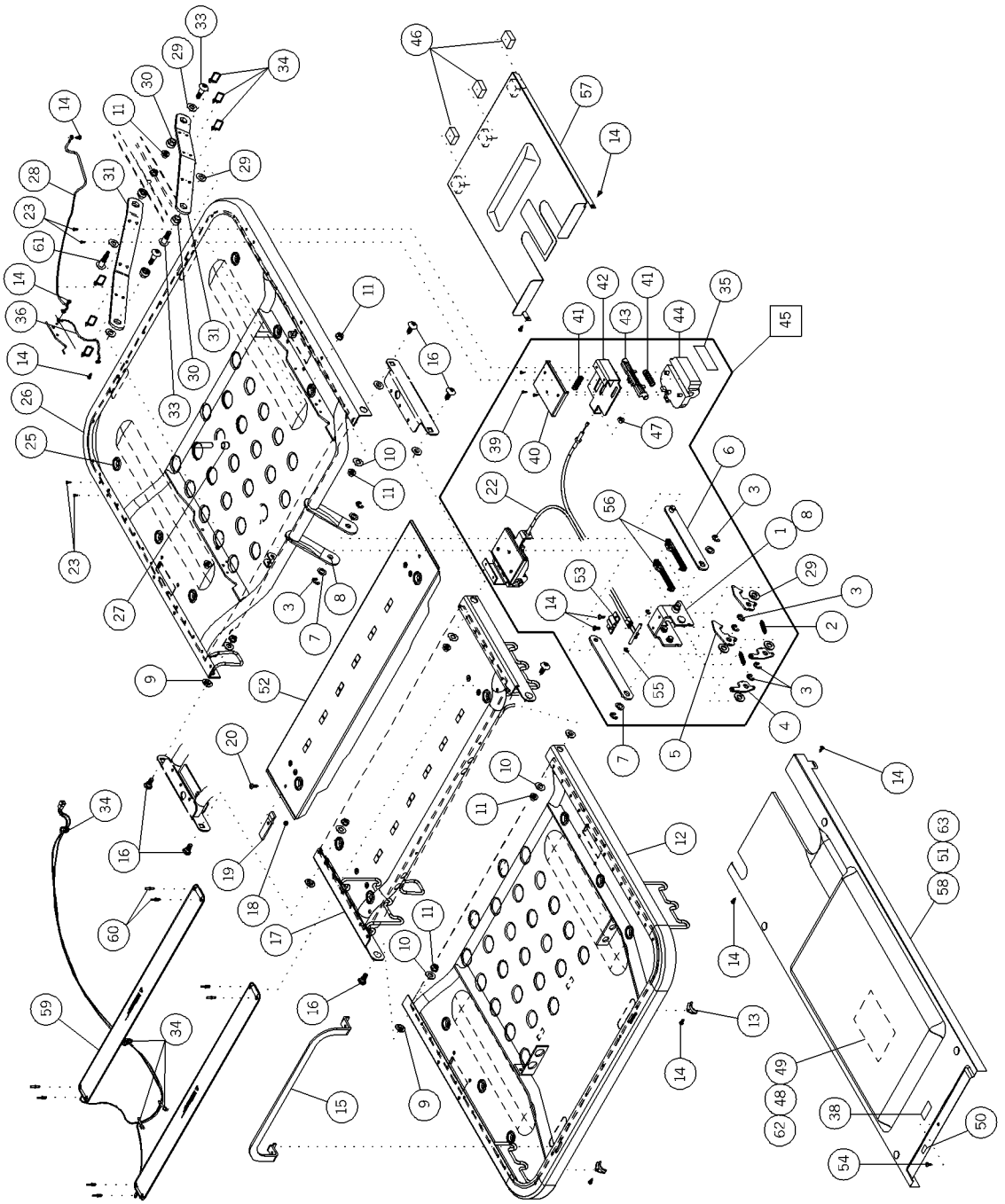

Table 5-28. Upper Frame/Sleep Surface Assembly

Item Number	Part Number	Quantity	Description
1	43355 (1000)		CPR housing assembly
2	43371 (1000)	2	Spring—extension
3	19678 (1000)	8	Tru-arc ring
4	43267 (1000)	2	Lever—CPR
5	43266 (1000)	2	Latch—CPR
6	43659 (1000)	2	Head strap assembly
7	37988 (1000)	4	Washer
8	SA3351 (1000)	As required	Lithium grease
9	44092 (1000)	6	Oilite bushing
10	4540 (1000)	6	Washer
11	43926 (1000)	10	Hex flange locknut
12	43580 (1000)	1	Foot pan assembly
13	19887 (1000)	2	Foot rack insert
14	43878 (1000)	18	Torx button head screw
15	39901-48 (1000)	1	Mattress stop
16	37104 (1000)	6	Shoulder screw
17	43581 (1000)	1	Knee pan assembly
18	20802 (1000)	2	Keps nut
19	20223 (1000)	2	Lock
20	43880 (1000)	2	Torx pan head screw
21			
22	43360 (1000)	1	Cable assembly—CPR release
23	44489 (1000)	4	Six lobe pan head screw
24			
25	12951 (1000)	18	Grommet
26	43352 (1000)	1	Head pan assembly
27	34838 (1000)	2	Vinyl cap
28	35176 (1000)	1	Ground strap assembly
29	43989 (1000)	8	Washer
30	43657 (1000)	4	Bushing—retracting arm
31	43364-48 (1000)	2	Retracting arm
32			
33	43656 (1000)	3	Shoulder bolt

Item Number	Part Number	Quantity	Description
34	19124 (1000)	10	Large cable tie
35	43338 (1000)	2	Label—CPR release
36	4565818 (1000)	1	Ground strap assembly
37			
38	22247 (1000)	1	Caution label
39	43389 (1000)	6	Hilow torx screw
40	43319 (1000)	2	Top cover—CPR release
41	34418	4	Compression spring
42	43320 (1000)	2	Mounting plate—CPR release
43	43317 (1000)	2	Button, CPR release
44	43318 (1000)	2	Handle—CPR release
45	43354 (1000)	1	CPR assembly complete
46	22646 (1000)	3	Felt pad
47	37232 (1000)	2	Hex nut
48	44508 (1000)	1	Wiring diagram label—230V
49	44082 (1000)	1	Wiring diagram label (115 volt models only)
50	39252 (1000)	1	Label—caution trapeze
51	44663-01-48 (1000)	1	Top cover assembly (115 volt models except for ZoneAire Sleep Surface)
52	38518-48 (1000)	1	Seat pan—pc
53	43746 (1000)	1	Clamp—CPR cable
54	43879 (1000)	1	Torx button head screw
55	18890 (1000)	2	Tru-arc ring
56	43361 (1000)	2	Slide—housing
57	SA1623-48 (1000)	1	Sliding head cover with felt pads
58	44663-02-48 (1000)	1	Top cover assembly (230 volt models only)
59	SA1481-01 (1000) or SA148102 (1000)	1 1	Bed exit tape switch kit (with 4 pin tape switch connector) Bed exit tape switch kit (with 6 pin tape switch connector)
60	36790 (1000)	8	Drive rivet
61	43656-01 (1000)	1	Shoulder bolt
62	45853 (1000)	1	Wiring diagram label (ZoneAire Sleep Surface models only)
63	45892-03-48 (1000)	1	Top cover assembly (ZoneAire Sleep Surface models only)

NOTES:

DynamicAire Sleep Surface—P923CD and P923ED

Figure 5-8. DynamicAire Sleep Surface—P923CD and P923ED

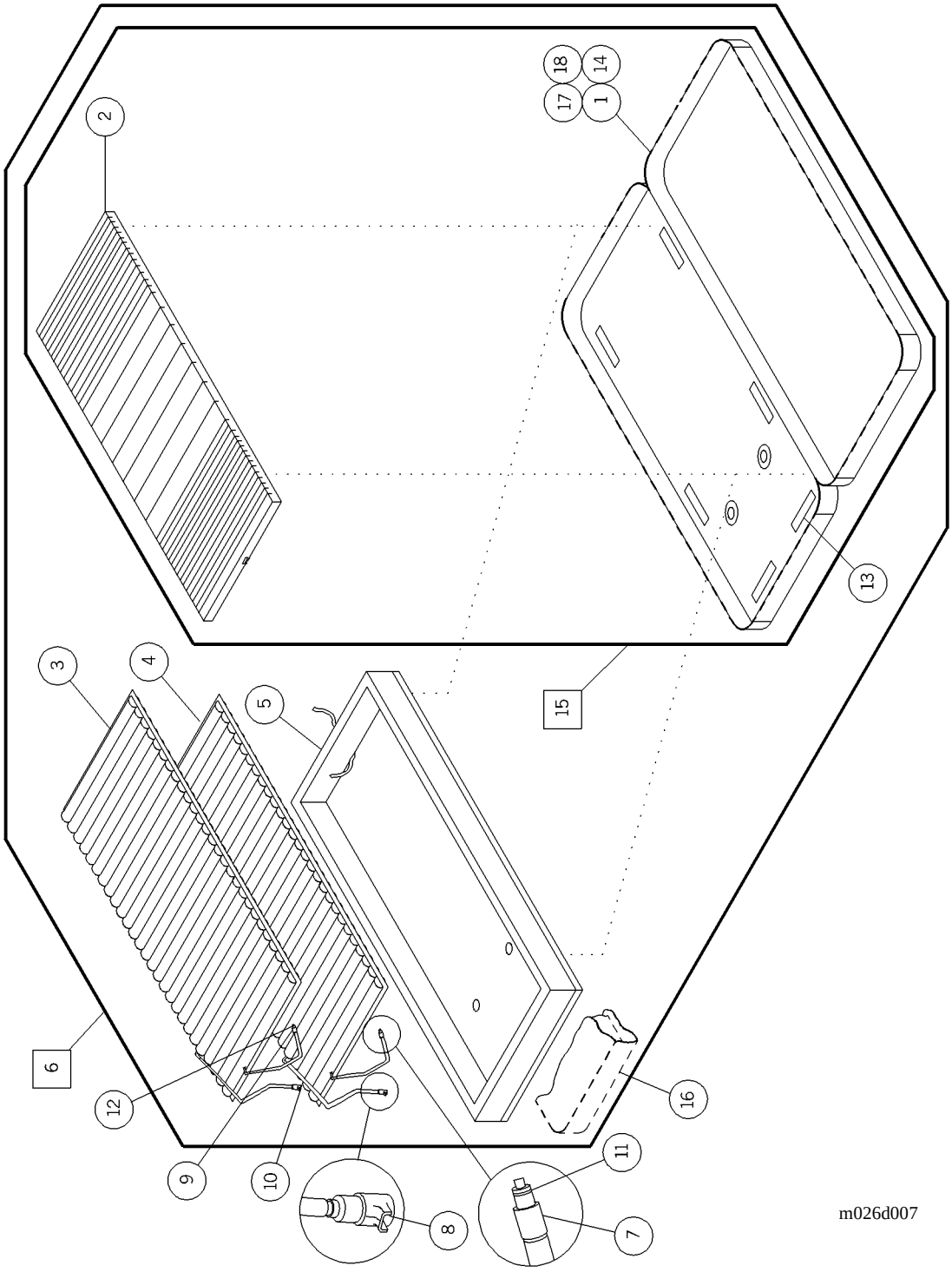

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Table 5-29. DynamicAire Sleep Surface—P923CD and P923ED

Item Number	Part Number	Quantity	Description
1	SA8612 (1000)	1	Mattress ticking (top and bottom) with liner and top foam
2	SA4908 (1000)	1	Top foam
3	SA4449 (1000)	1	Top bladder assembly
4	SA4450 (1000)	1	Bottom bladder assembly
5	SA4839 (1000)	1	Bottom foam—P923CD
6	923CD or 923ED (1000)	1 1	Air mattress or Flame retardant mattress
7	SA4461 (1000)	1	Male coupling—sleep surface
8	SA4462 (1000)	1	Female coupling—sleep surface
9	SA4463 (1000)	1	Male coupling—sleep surface
10	SA4464 (1000)	1	Female coupling—sleep surface
11	SA4584 (1000)	1	Large O-ring
12	SA4583 (1000)	1	Small O-ring
13	SA4589 (1000)	6	Magnet
14			
15	Not available	—	Top foam and ticking— P923CD/ED
16	SA4927 (1000)	1	Mattress liner—P923ED
17		1	
18			

DynamicAire Sleep Surface—P923CD03 and P923ED03

Figure 5-9. DynamicAire Sleep Surface—P923CD03 and P923ED03

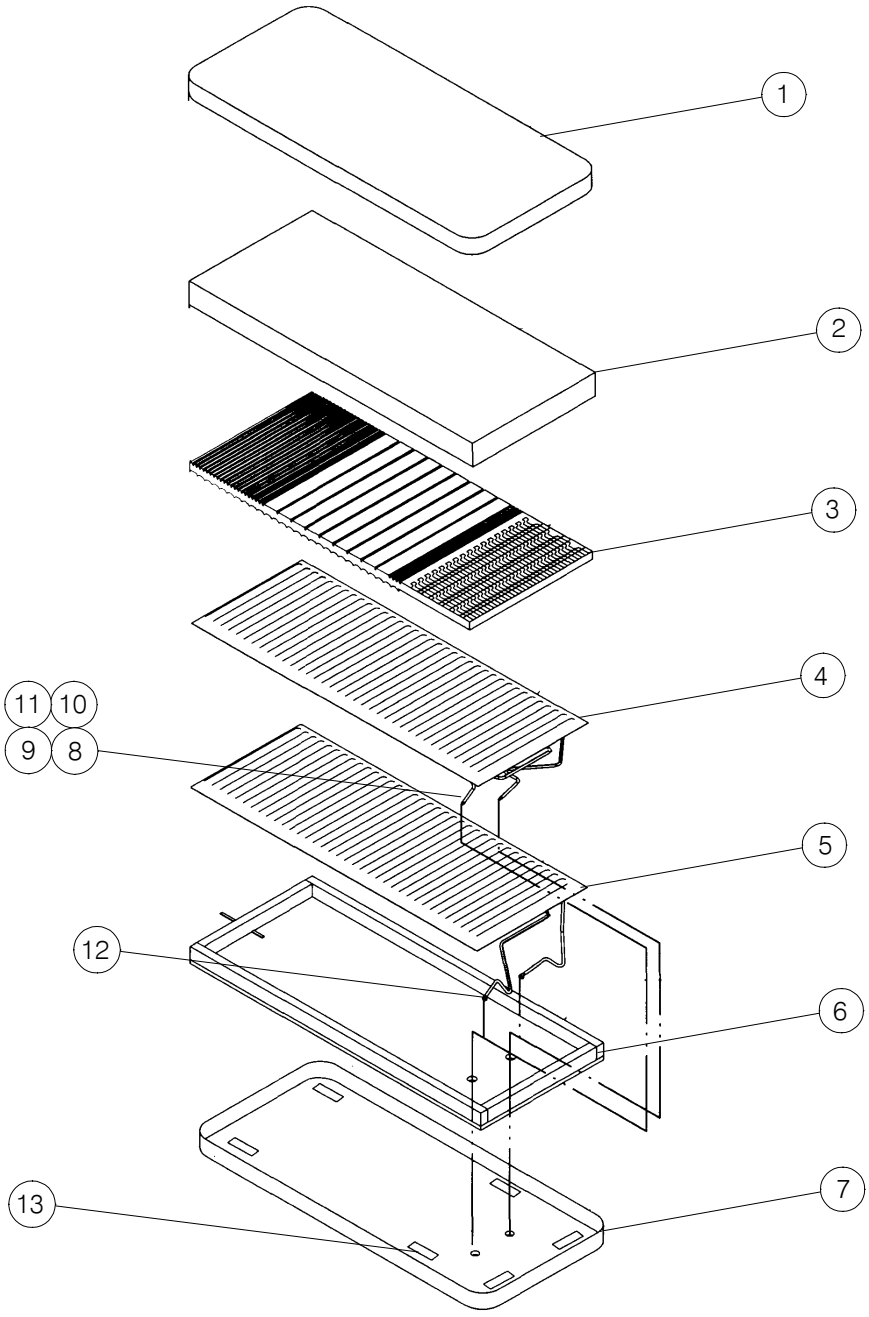

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Table 5-30. DynamicAire Sleep Surface—P923CD03 and P923ED03

Item Number	Part Number	Quantity	Description
1	6132102 (1000)	1	Top cover
2	6132702 (1000)	1	Inner liner
3	SA4908 (1000)	1	Top foam
4	SA4449 (1000)	1	Top bladder assembly
5	SA4450 (1000)	1	Bottom bladder assembly
6	SA4839 (1000)	1	Bottom foam
7	6132402 (1000)	1	Bottom cover
8	SA4461 (1000)	1	Male coupling—sleep surface (0.250")
9	SA4463 (1000)	1	Male coupling—sleep surface (0.125")
10	SA4584 (1000)	1	Large O-ring
11	SA4583 (1000)	1	Small O-ring
12	SA4462 (1000)	1	Female coupling—sleep surface (0.250")
13	SA4464 (1000)	1	Female coupling—sleep surface (0.125")
14	SA4589 (1000)	6	Magnet

DynamicAire Sleep Surface Compressor Assembly—Old Style

Figure 5-10. DynamicAire Sleep Surface Compressor Assembly—Old Style

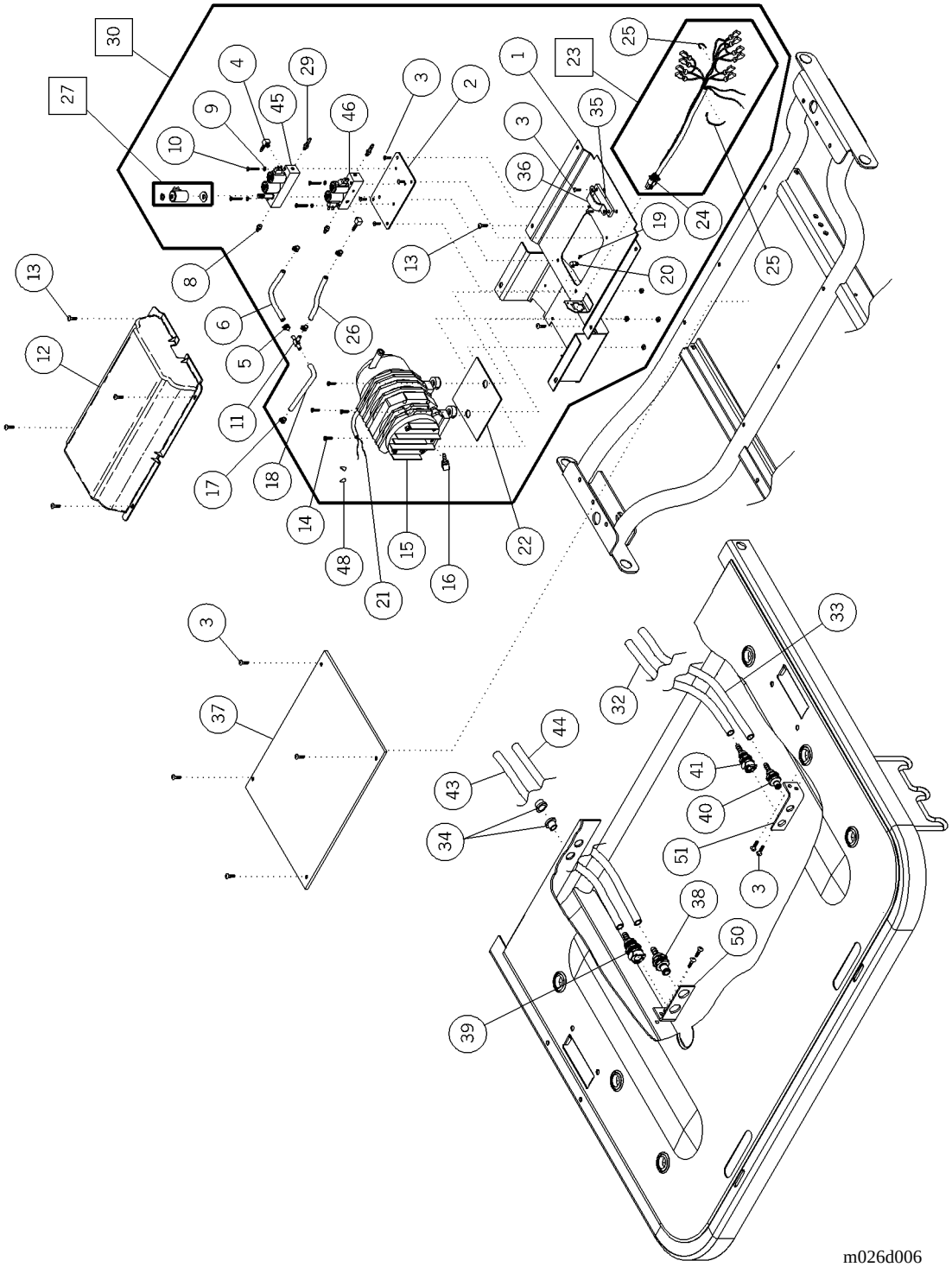

Table 5-31. DynamicAire Sleep Surface Compressor Assembly—Old Style

Item Number	Part Number	Quantity	Description
1	38277-48 (1000)	1	Air system weld assembly
2	38291 (1000)	1	Manifold mounting plate
3	43878 (1000)	10	Torx button head screw
4	38287 (1000)	2	Elbow—90°
5	38296 (1000)	4	Hose clamp
6	38292 (1000)	1	Tubing
7			
8	38289 (1000)	2	Relief valve
9	39257 (1000)	4	Lockwasher—helical
10	21230 (1000)	4	Screw
11	39507 (1000)	1	Connector tee
12	38301 (1000)	1	Air system cover assembly
13	43879 (1000)	7	Torx button head screw
14	90027-08 (1000)	4	Screw
15	38256 (1000)	1	Air compressor
16	38283 (1000)	1	Fitting elbow—90°
17	38202 (1000)	1	Hose clamp (red)
18	Not available	—	Formed tubing
19	4759 (1000)	1	Screw
20	26797 (1000)	1	Cable clamp
21	30951 (1000)	2	Pin
22	38759 (1000)	1	Insulator
23	38583 (1000)	1	Compressor/solenoid breakout cable
24	30973 (1000)	1	Connector housing
25	14450 (1000)	5	Small cable tie
26	38293 (1000)	1	Tubing
27	SA4475 (1000)	5	Solenoid
28			
29	38288 (1000)	2	Straight fitting
30	38276 (1000)	1	Air system assembly
31			

Item Number	Part Number	Quantity	Description
32	38197-02 (1000)	1	Fill tubing
33	38197-01 (1000)	1	Fill tubing
34	39416 (1000)	12	Bushing
35	38546 (1000)	1	Spacer
36	38300 (1000)	1	Support clamp
37	42859-48 (1000)	1	Sliding cover bracket (beds without air system only)
38	38187 (1000)	1	Quick coupling—(small) male
39	39027 (1000)	1	Quick coupling—(small) female
40	39024 (1000)	1	Quick coupling—(large) female
41	38189 (1000)	1	Quick coupling—(large) male
42			
43	42734-04 (1000)	1	Sense hose—blue
44	42734-03 (1000)	1	Sense hose—red
45	42556 (1000)	1	Valve manifold—upper
46	42557 (1000)	1	Valve manifold—lower
47			
48	32741 (1000)	2	Wire joint
49			
50	38219 (1000)	1	0.250 coupling mount
51	38220 (1000)	1	0.125 coupling mount

NOTES:

DynamicAire Sleep Surface Compressor Assembly—New Style

Figure 5-11. DynamicAire Sleep Surface Compressor Assembly—New Style

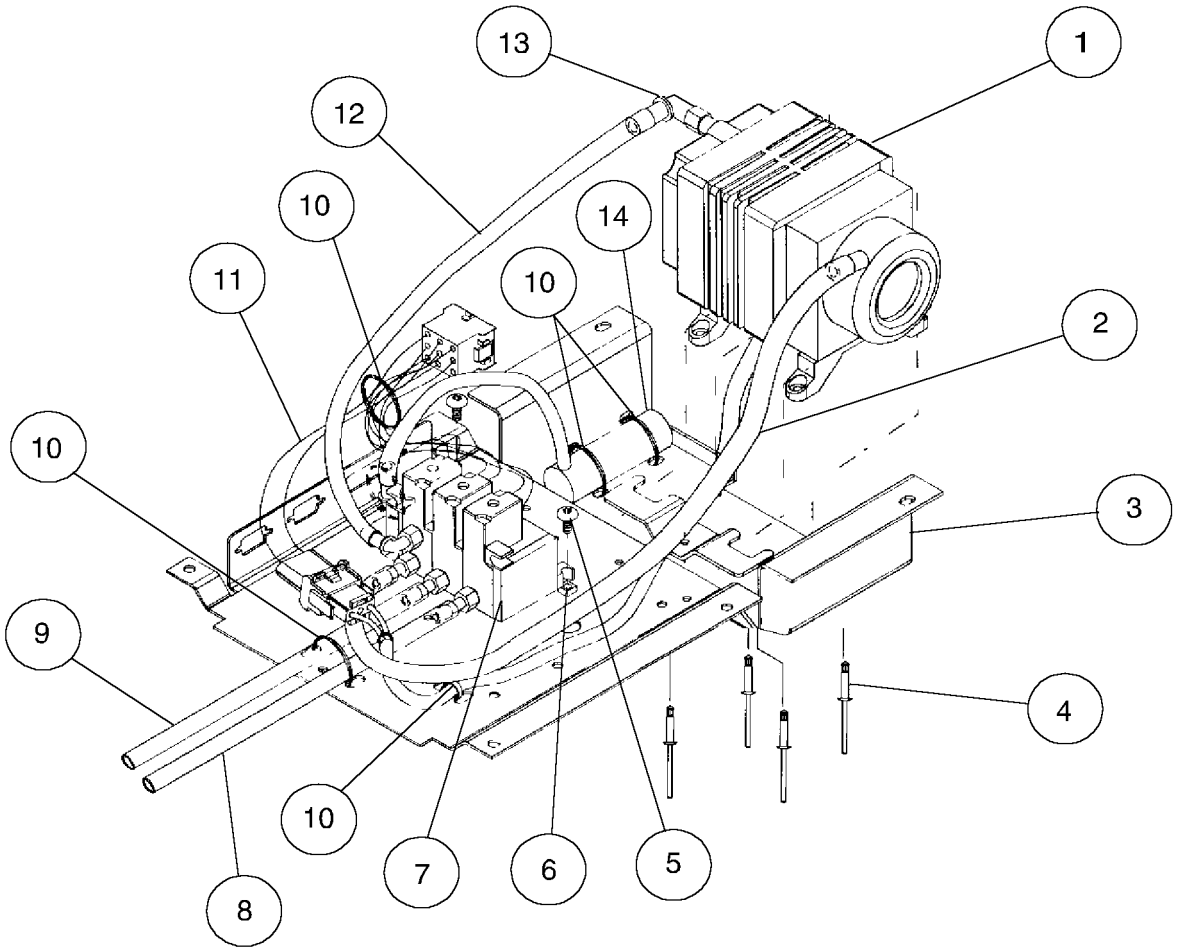

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Table 5-32. DynamicAire Sleep Surface Compressor Assembly—New Style

Item Number	Part Number	Quantity	Description
1	46918 (1000)	1	Air pump assembly
2	4733414 (1000)	1	Tubing, pump vacuum
3	47084 (1000)	10	Air system weld assembly
4	47020 (1000)	4	Rivet
5	15380 (1000)	2	Screw
6	46981 (1000)	3	Screw grommet
7	4710501 (1000)	1	Surface control valve
8	3819702 (1000)	1	Tubing, fill (blue)
9	3819701 (1000)	1	Tubing, fill (red)
10	19124 (1000)	5	Wire tie
11	46873 (1000)	1	Cable, pump to valves
12	4698009 (1000)	1	Air hose
13	47124 (1000)	1	Elbow fitting
14	47103 (1000)	1	Muffler assembly

ZoneAire Sleep Surface—P1410CA and P1410EA

Figure 5-12. ZoneAire Sleep Surface—P1410CA and P1410EA

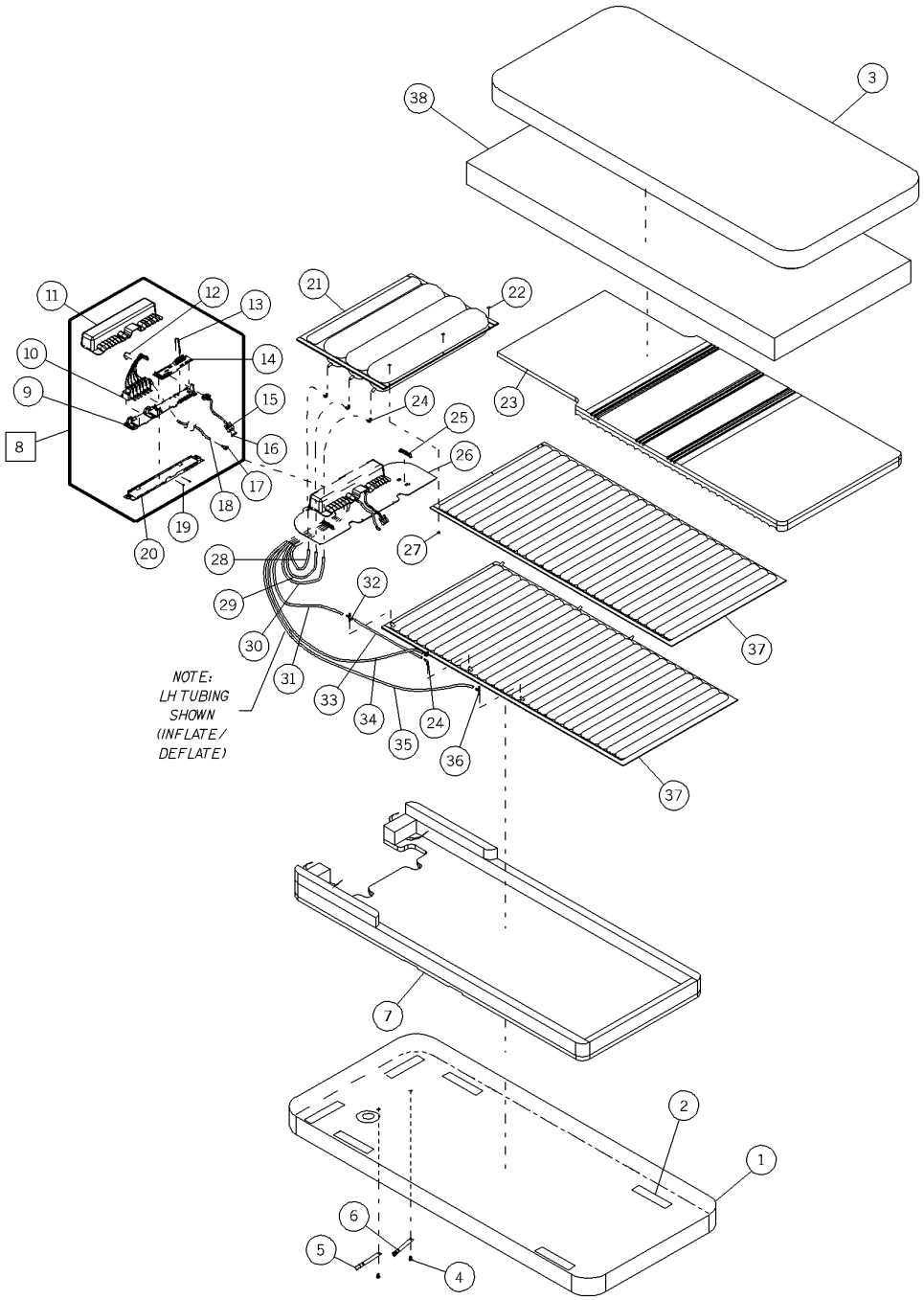

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Table 5-33. ZoneAire Sleep Surface—P1410CA and P1410EA

Item Number	Part Number	Quantity	Description
1	6132402 (1000)	1	Bottom cover
2	SA4589 (1000)	6	Magnet
3	6132102 (1000)	1	Top cover
4	SA7395 (1000)	2	Push rivet
5	SA7396 (1000)	1	Strap with buckle catch
6	SA7396 (1000)	1	Strap with buckle catch
7	Not sold separately	—	Bottom foam
8	45679 (1000)	1	Surface control module
9	45598 (1000)	1	Surface control frame
10	45631 (1000)	1	Surface control valves
11	45649 (1000)	1	Surface control cover
12	14450 (1000)	1	Small cable tie
13	45682 (1000)	6	Flex tubing
14	44740 (1000)	1	Sensor control board
15	45573 (1000)	1	Sensor cable—surface
16	45955 (1000)	1	Connector cover
17	45846 (1000)	1	Quick coupling—female
18	45681-02 (1000)	1	Urethane tubing
19	42006 (1000)	2	Screw lock
20	45640-PL (1000)	1	Surface control base
21	SA7399 (1000)	1	Heel bladder
22	SA7400 (1000)	3	Snap rivet—male
23	SA7401 (1000)	1	Top foam
24	SA7402 (1000)	10	Elbow connector
25	SA7403 (1000)	2	Tubing clamp
26	SA7404 (1000)	1	Locator plate
27	SA7405 (1000)	3	Snap rivet—female
28	SA7406 (1000	2	Tubing heel bladder, zone 3—inflate/deflate (lh), sense (rh)
29	SA7407 (1000)	2	Tubing, heel bladder, zone 2—inflate/deflate (lh), sense (rh)
30	SA7408 (1000)	2	Tubing heel bladder, zone 1—inflate/deflate (lh), sense (rh)

Item Number	Part Number	Quantity	Description
31	SA7409 (1000)	2	Tubing, thigh section—inflate/deflate (lh), sense (rh)
32	SA7410 (1000)	2	Cross connector
33	SA7411 (1000)	2	Tubing, thigh/seat section, main bladder, lower—inflate/deflate (lh), sense (rh)
34	SA7412 (1000)	2	Tubing, seat section, main bladder, upper—inflate/deflate (lh), sense (rh)
35	SA7413 (1000)	2	Tubing, head section, main bladder —inflate/deflate (lh), sense (rh)
36	SA7414 (1000)	2	Tee connector
37	SA7415 (1000)	2	Main bladder, upper/lower

NOTES:

ZoneAire Sleep Surface Power/Air Supply Module—Old Style

Figure 5-13. ZoneAire Sleep Surface Power/Air Supply Module—Old Style

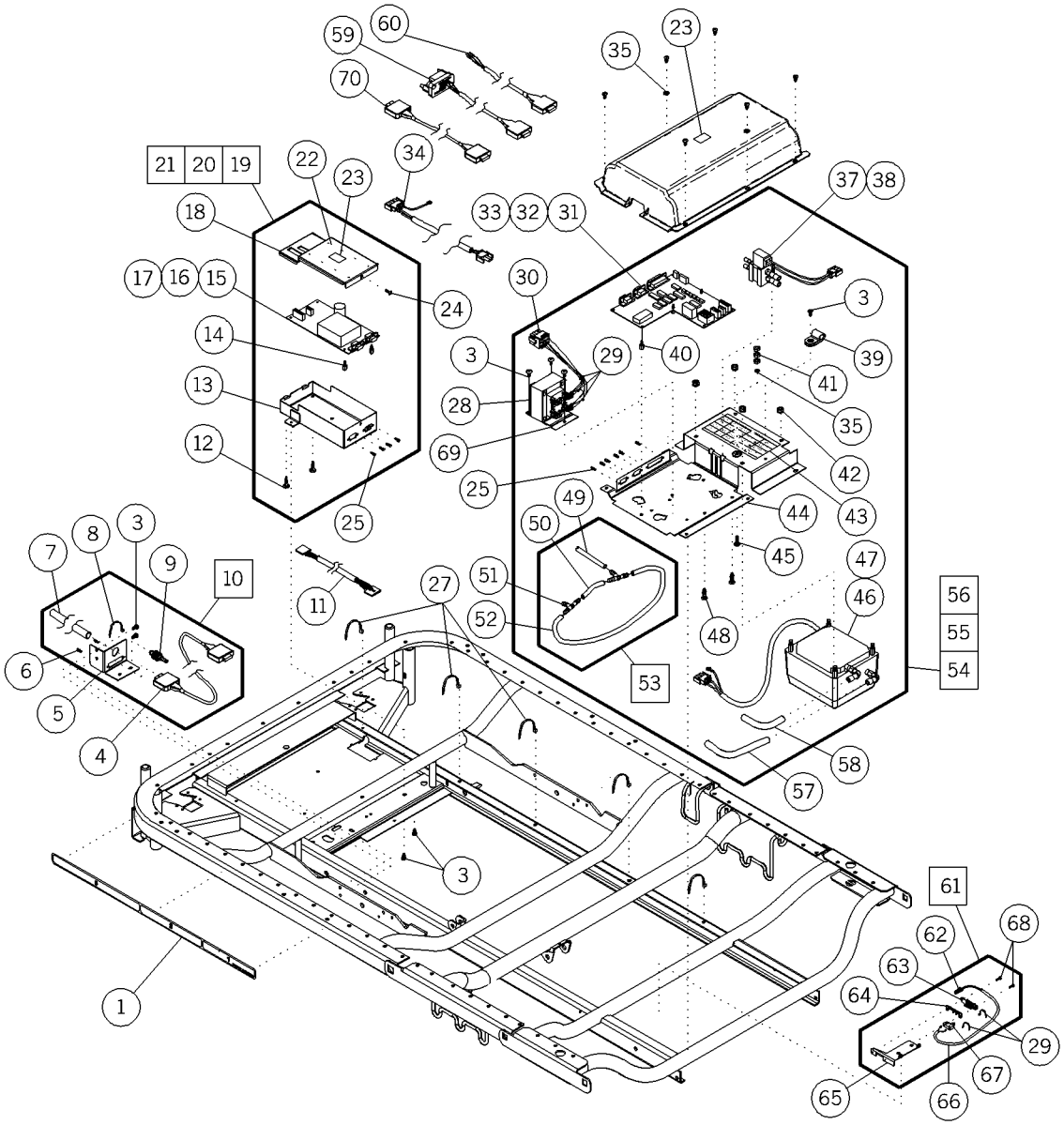

Table 5-34. ZoneAire Sleep Surface Power/Air Supply Module—Old Style

Item Number	Part Number	Quantity	Description
1	45648-01 (1000)	1	Heel relief label left
2			
3	43878 (1000)	16	Torx button head screw
4	61010-01 (1000)	1	Sensor cable, bed (68" with quick disconnect)
5	45600-48 (1000)	1	Coupling bracket
6	45687 (1000)	2	Screw lock assembly
7	45681-01 (1000)	1	Urethane tubing
8	19124 (1000)	1	Large cable tie
9	38189 (1000)	1	Quick coupling
10	45842 (1000)	1	Surface connector assembly
11	45629 (1000)	1	Siderail cable assembly
12	39763-02 (1000)	3	Standoff
13	45091-PL (1000)	1	Power supply base assembly
14	36973-2 (1000)	2	Standoff
15	44719-01 (1000)	1	Power supply board (115V AC, UL/CSA approved beds only)
16	44719-02 (1000)	1	Power supply board (230V AC, UL/CSA approved beds only))
17	44719-03 (1000)	1	Power supply board (230V AC, IEC approved beds only)
18	45089-PL (1000)	1	Box cover
19	45092-01 (1000)	1	Power supply module (115V AC, UL/CSA approved beds only)
20	45092-02 (1000)	1	Power supply module (230V AC, UL/CSA approved beds only)
21	45092-03 (1000)	1	Power supply module (230V AC, IEC approved beds only)
22	45776 (1000)	1	Fuse resistor label
23	22247 (1000)	1	Caution label
24	90245-06 (1000)	1	Screw
25	42006 (1000)	1	Screw lock
26			
27	19124 (1000)	10	Large cable tie
28	45575 (1000)	1	Transformer
29	14450 (1000)	5	Small cable tie

Item Number	Part Number	Quantity	Description
30	45619 (1000)	1	Transformer cable assembly
31	44760-01 (1000)	1	Air control board (115V AC, “C” version beds only)
32	4476002 (1000)	1	Air control board assembly (115V AC, “A” and “B” version beds only)
33	4476003 (1000)	1	Air control board assembly (230V AC beds only)
34	45618 (1000)	1	Power cord assembly
35	15907 (1000)	3	Lockwasher
36	38302-02 (1000)	1	Air control cover
37	45632 (1000)	1	Switching valve assembly (115V AC beds only)
38	45848 (1000)	1	Switching valve assembly (230V AC beds only)
39	45647 (1000)	1	Cable clamp
40	35663 (1000)	3	Standoff
41	28837 (1000)	3	Hex nut
42	20802 (1000)	4	Keps nut
43	45852 (1000)	1	Fuse, resistor label
44	45667-PL (1000)	1	Pump module base assembly
45	43879 (1000)	1	Torx button head screw
46	45630 (1000)	1	Air pump assembly (115V AC beds only)
47	45847 (1000)	1	Air pump assembly (230V AC beds only)
48	39763-04 (1000)	2	Standoff
49	SA7389 (1000)	1	Muffler tube—connector
50	SA7390 (1000)	1	Muffler tube—short
51	SA7391 (1000)	2	Tube fitting—tee
52	SA7392 (1000)	1	Muffler tube—long
53	45792 (1000)	1	Muffler assembly
54	47082-01S (1000)	1	Air supply module (115V AC, “C” version beds only)
55	4708202S (1000)	1	Air supply module (115V AC, “A” and “B” version beds only)
56	45677-03 (1000)	1	Air supply module (230V AC beds only)
57	45680-01 (1000)	1	Tubing—pump vacuum
58	45680-02 (1000)	1	Tubing—pump pressure

Item Number	Part Number	Quantity	Description
59	44811-02 (1000)	1	Cable, mf-bednet/non-scale
60	44811-01 (1000)	1	Cable, mf-bednet/scale
61	45626 (1000)	1	CPR switch assembly
62	30998-03 (1000)	1	Amp mte 3 position housing
63	38334 (1000)	1	Switch holder
64	38329 (1000)	1	Switch retainer
65	45601 (1000)	1	Switch bracket, CPR
66	34395 (1000)	2.66’	2 conductor cable blank
67	45625 (1000)	1	CPR switch
68	25192 (1000)	2	Screw
69	45684-PL (1000)	1	Transformer bracket
70	45010-43 (1000)	1	Cable, lon, 9 conductor

ZoneAire Sleep Surface Power Supply Module—New Style

Figure 5-14. ZoneAire Sleep Surface Power Supply Module—New Style

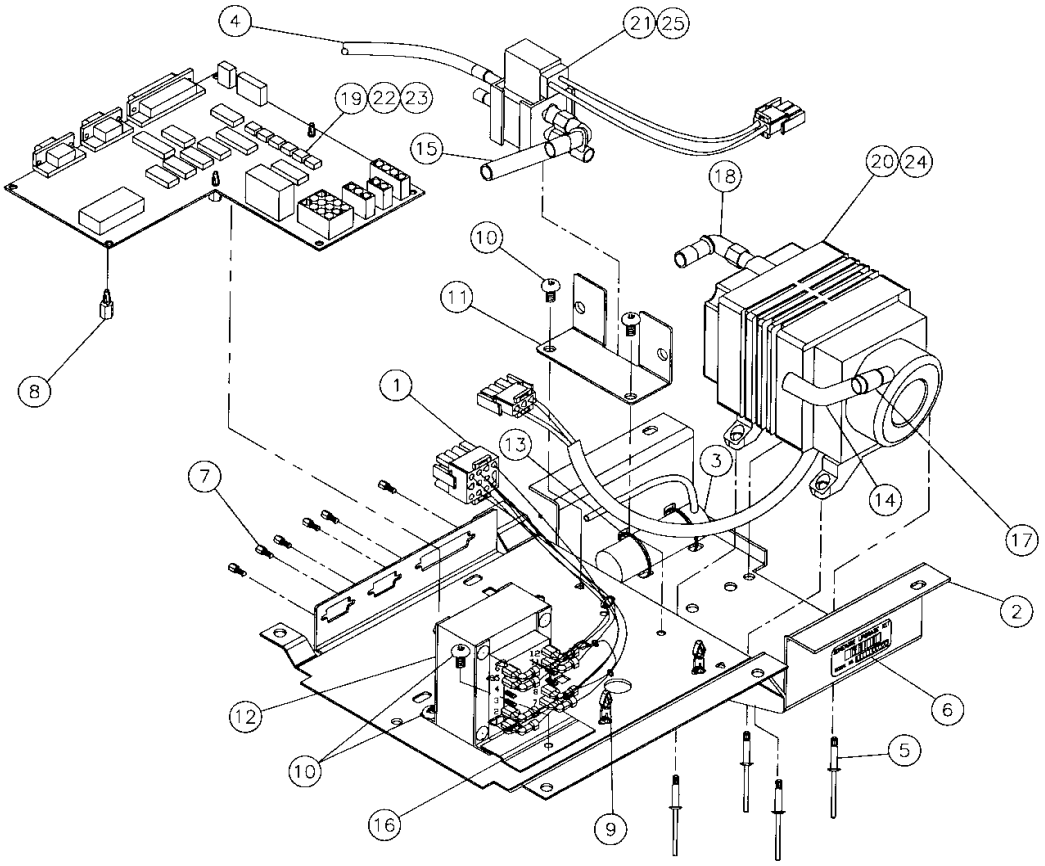

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Table 5-35. ZoneAire Sleep Surface Power Supply Module—New Style

Item Number	Part Number	Quantity	Description
1	45619 (1000)	1	Transformer cable assembly
2	47084-pl (1000)	1	Pump module base assembly
3	47103 (1000)	1	Muffler assembly
4	45681-01 (1000)	1	Urethane tubing
5	47020 (1000)	4	Rivet
6	60162H35J0 (1000)	1	ZoneAire label
7	28968 (1000)	6	Screw lock
8	36973-03 (1000)	3	1/2" standoff
9	39763-04 (1000)	2	Standoff
10	43878 (1000)	5	Torx button head screw
11	47023-pl (1000)	1	Bracket, switching valve
12	45575 (1000)	1	Transformer, 80VA
13	19124 (1000)	2	Large cable tie
14	45680-02 (1000)	1	Tubing—pump pressure
15	46980-12 (1000)	1	Tubing
16	45684-pl (1000)	1	Transformer bracket
17	38202 (1000)	3	Hose clamp (red)
18	47124 (1000)	1	Elbow fitting
19	44760-01 (1000)	1	Air control board (115 volt “C” version beds only)
20	46918 (1000)	1	Air pump assembly (115 volt models only)
21	47083 (1000)	1	Switching valve assembly (115 volt models only)
22	4476002 (1000)	1	Air control board assembly (115 volt “A” and “B” version, and all 3-motor, and 4-motor beds only)
23	45944-03 (1000)	1	Air control board assembly (230 volt “C” version beds only)
24	45847 (1000)	1	Air pump assembly (230 volt models only)
25	45848 (1000)	1	Switching valve assembly (230 volt models only)

Head Panel Assembly—P4060A

Figure 5-15. Head Panel Assembly—P4060A

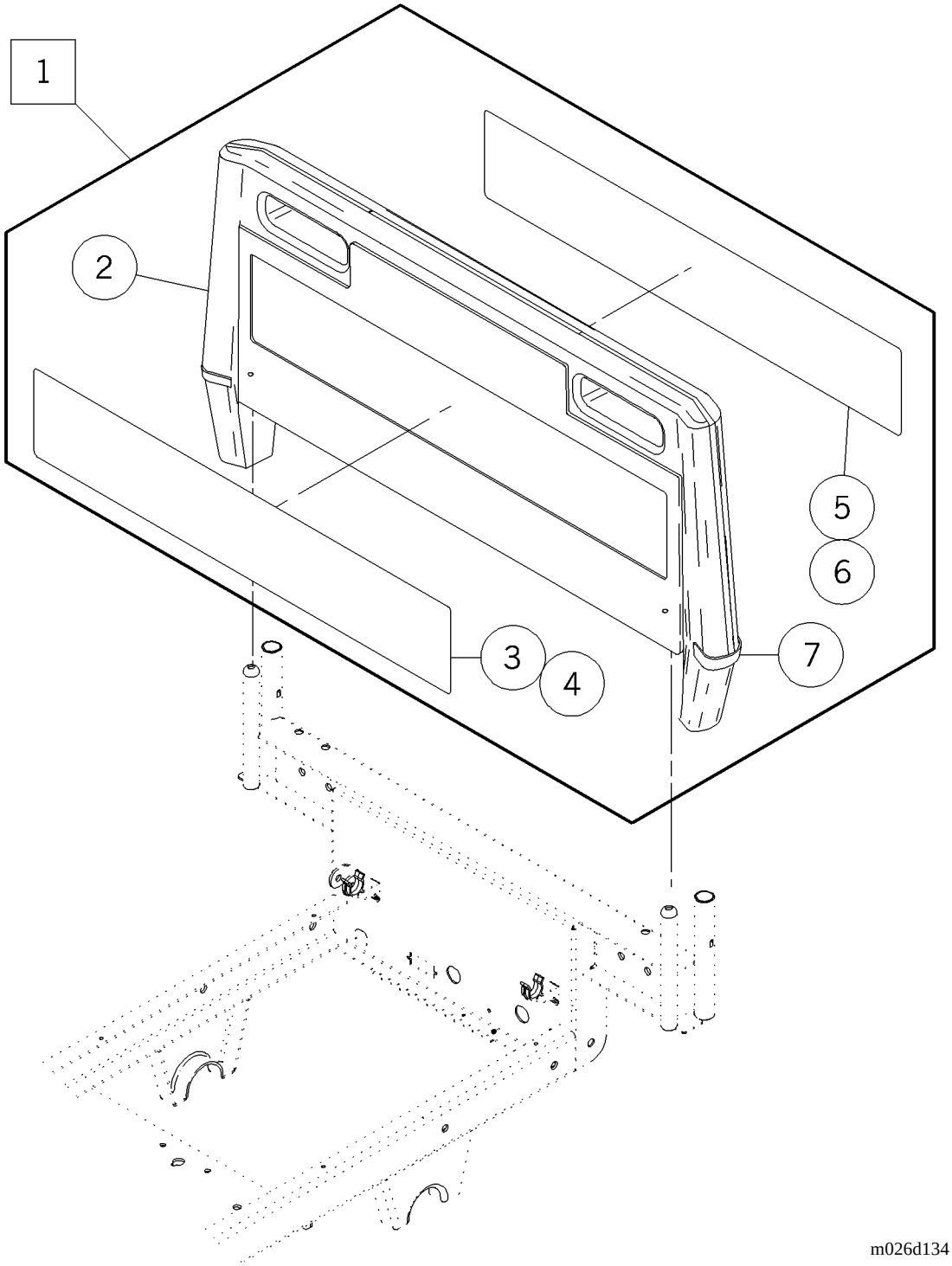

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Table 5-36. Head Panel Assembly—P4060A

Item Number	Part Number	Quantity	Description
1	P4060 (1000)*	1	Head panel assembly
2	37992 (1000)	1	Head panel
3	38522 (1000)*	1	HPL insert
4	38523 (1000)	1	Adhesive tape
5	38524 (1000)*	1	HPL insert
6	38525 (1000)	1	Adhesive tape
7	38328 (1000)	1	Bumper

* Specify high pressure laminate color.

Foot Panel Assembly—P4061A (P1105 Bed with Toggle Switches)

Figure 5-16. Foot Panel Assembly—P4061A (P1105 Bed with Toggle Switches)

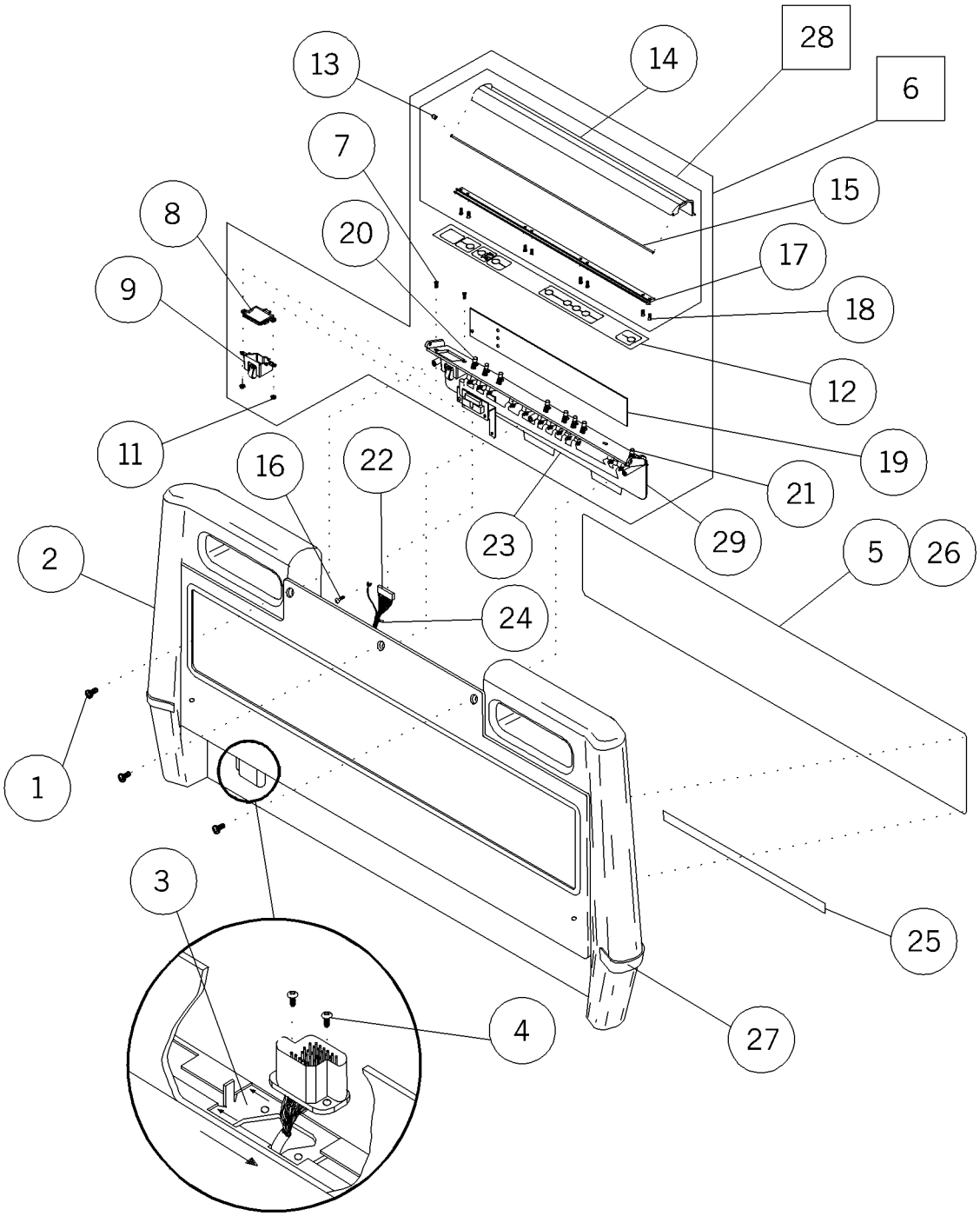

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Table 5-37. Foot Panel Assembly—P4061A (P1105 Bed with Toggle Switches)

Item Number	Part Number	Quantity	Description
1	752 (1000)	3	Screw truss head
2	40294 (1000)	1	Footboard shell assembly
3	43604 (1000)	1	Receptacle bracket
4	18252 (1000)	2	Screw
5	38524 (1000)*	1	HPL insert
6	44165-02 (1000) or 4428901 (1000)	1 1	Control panel assembly or Control panel assembly—VIP beds only
7	90299-06 (1000)	2	Screw
8	38609 (1000)	1	Window
9	38753 (1000)	1	Trendelenburg indicator assembly
10			
11	37890 (1000)	2	Keps nut
12	43972-02 (1000)	1	Nurse control overlay
13	38529 (1000)	1	Torsion spring
14	38883 (1000)	1	Door assembly—complete
15	39161 (1000)	1	Pin
16	90029-05 (1000)	1	Screw
17	39159 (1000)	1	Aluminum extrusion plate
18	90196-06 (1000)	8	Screw—hilow
19	40389-02 (1000)	1	LED overlay
20	30820-01 (1000)	3	Toggle switch—momentary
21	30819-01 (1000)	5	Toggle switch—on/on
22	41383 (1000)	1	Nurse control cable—footboard
23	43154-01 (1000)	1	Nurse control flex circuit assembly
24	19124 (1000)	1	Large cable tie
25	40310 (1000)	1	Caution label
26	38525 (1000)	1	Adhesive tape
27	38328 (1000)	1	Bumper
28	SA1554 (1000)	1	Door assembly—without scale unit
29	39595-01 (1000)	1	Control housing—no scale

* Specify high pressure laminate color.

Foot Panel Assembly—P4061B (P1105 “C” and “E” Version Beds with Membrane Switches)

Figure 5-17. Foot Panel Assembly—P4061B (P1105 “C” and “E” Version Beds with Membrane Switches)

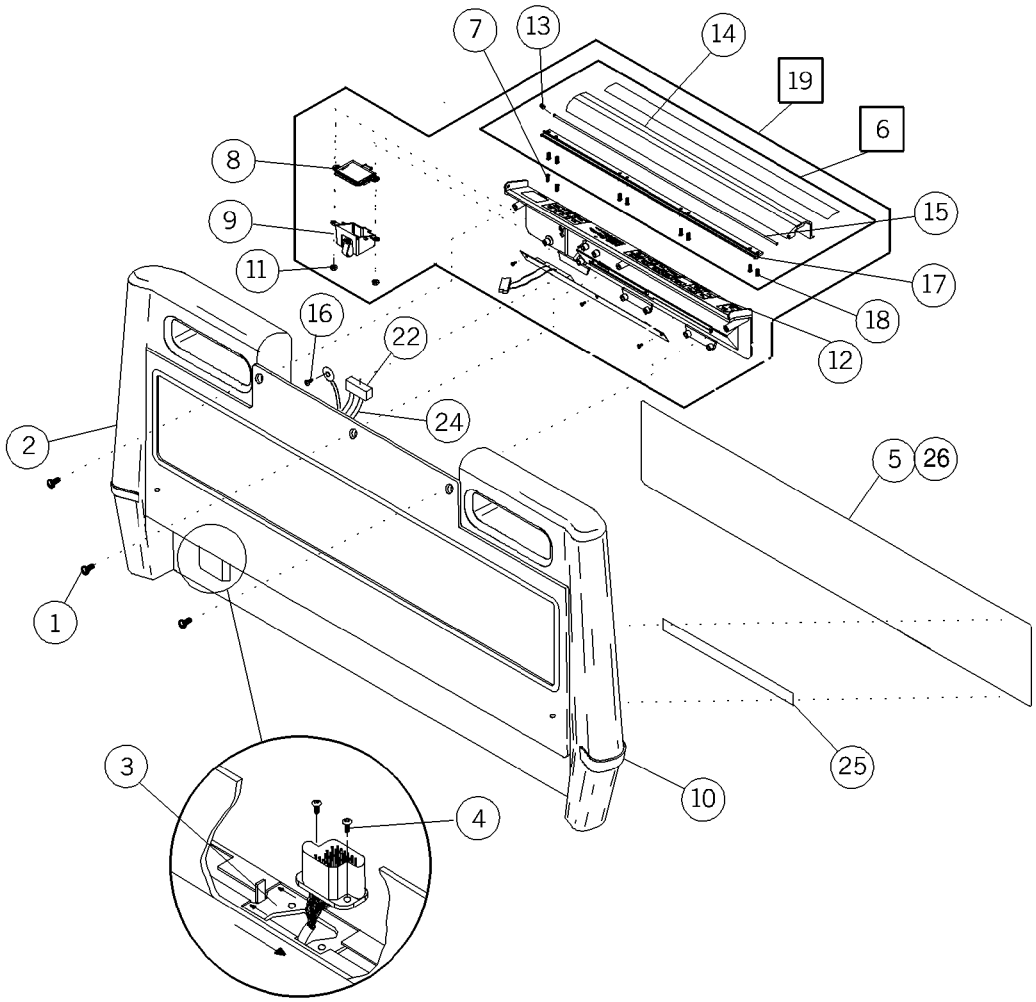

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Table 5-38. Foot Panel Assembly—P4061B (P1105 “C” and “E” Version Beds with Membrane Switches)

Item Number	Part Number	Quantity	Description
1	752 (1000)	3	Screw truss head
2	40294 (1000)	1	Footboard shell assembly
3	43604 (1000)	1	Receptacle bracket
4	18252 (1000)	2	Screw
5	38524 (1000)*	1	HPL insert
6	SA1554 (1000)	1	Door assembly—without scale/air
7	90299-06 (1000)	2	Screw
8	38609 (1000)	1	Window
9	38753 (1000)	1	Trendelenburg indicator assembly
10	38328 (1000)	1	Bumper
11	37890 (1000)	2	Keps nut
12	49757-01 (1000) or 49757-04 (1000)	1 1	Cast key panel assembly, no scale/no air—”C” and “E” version beds only Cast key panel assembly, no scale/no air—VIP ”C” and “E” version beds only
13	38529 (1000)	1	Torsion spring
14	42694 (1000)	1	Door assembly—complete
15	39161 (1000)	1	Pin
16	90029-05 (1000)	1	Screw
17	3915948 (1000)	1	Extrusion
18	90196-06 (1000)	8	Screw—hilow
19	49758-01 (1000) or 49758-04 (1000)	1 1	Control panel assembly, no scale/no air—”C” and “E” version beds only Control panel assembly, no scale/no air—VIP ”C” and “E” version beds only
20			
21			
22	41383 (1000)	1	Nurse control cable—footboard
23			
24	19124 (1000)	1	Large cable tie
25	40310 (1000)	1	Caution label

* Specify high pressure laminate color.

Item Number	Part Number	Quantity	Description
26	38525 (1000)	1	Adhesive tape
Not shown	49755 (1000)	1	Cable, 12 conductor
Not shown	49756 (1000)	1	Cable, 8 conductor

NOTES:

Foot Panel Assembly—P4061C (P1105 “F” Version Bed with Membrane Switches)

Figure 5-18. Foot Panel Assembly—P4061C (P1105 “F” Version Bed with Membrane Switches)

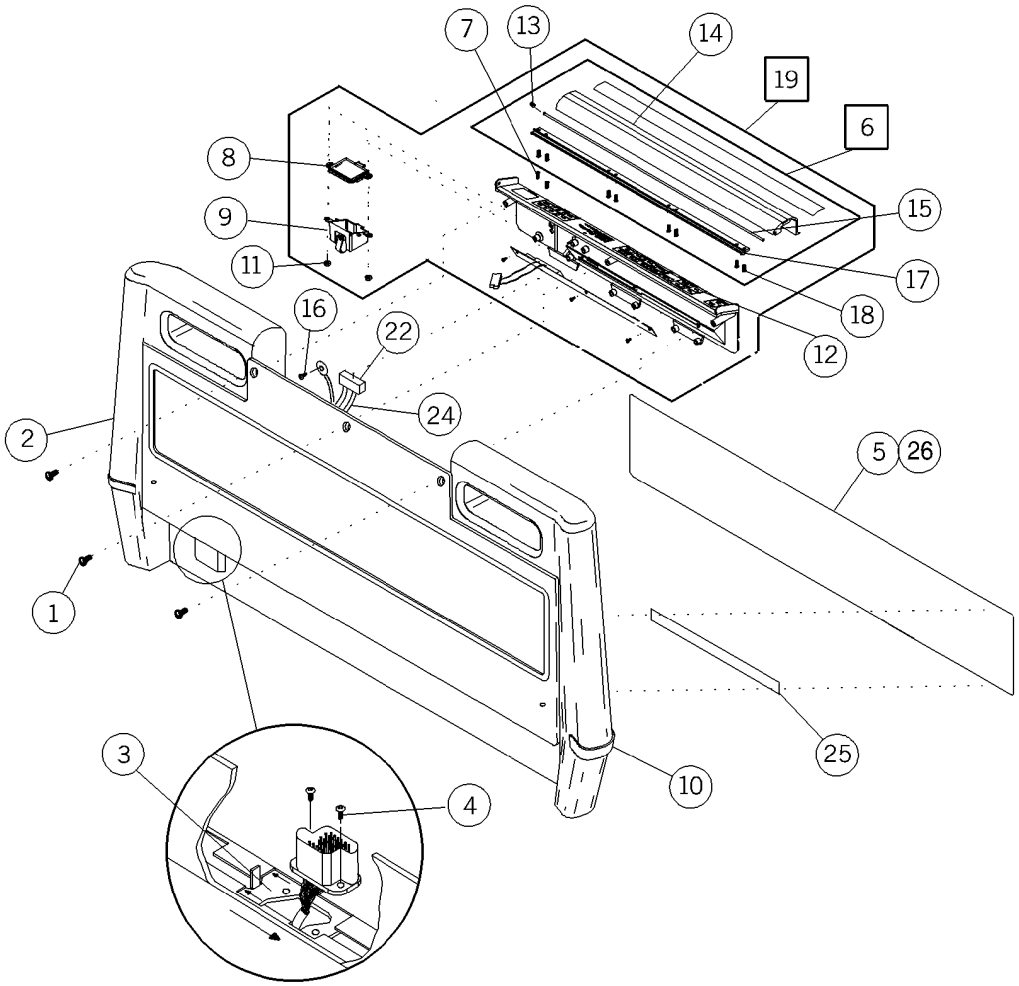

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Table 5-39. Foot Panel Assembly—P4061C (P1105 "F" Version Bed with Membrane Switches)

Item Number	Part Number	Quantity	Description
1	752 (1000)	3	Screw truss head
2	40294 (1000)	1	Footboard shell assembly
3	43604 (1000)	1	Receptacle bracket
4	18252 (1000)	2	Screw
5	38524 (1000)*	1	HPL insert
6	SA1554 (1000)	1	Door assembly—without scale/air
7	90299-06 (1000)	2	Screw
8	38609 (1000)	1	Window
9	38753 (1000)	1	Trendelenburg indicator assembly
10	38328 (1000)	1	Bumper
11	37890 (1000)	2	Keps nut
12	6274501 (1000) or 6274504 (1000)	1 1	Cast key panel assembly, no scale/no air—"F" version bed only Cast key panel assembly, no scale/no air—VIP "F" version bed only
13	38529 (1000)	1	Torsion spring
14	42694 (1000)	1	Door assembly—complete
15	39161 (1000)	1	Pin
16	90029-05 (1000)	1	Screw
17	3915948 (1000)	1	Extrusion
18	90196-06 (1000)	8	Screw—hilow
19	62631-03 (1000) or 62631-05 (1000)	1 1	Control panel assembly, no scale/no air—"F" version bed only Control panel assembly, no scale/no air—VIP "F" version bed only
20			
21			
22	41383 (1000)	1	Nurse control cable—footboard
23			
24	19124 (1000)	1	Large cable tie
25	40310 (1000)	1	Caution label

* Specify high pressure laminate color.

Item Number	Part Number	Quantity	Description
26	38525 (1000)	1	Adhesive tape
Not shown	49755 (1000)	1	Cable, 12 conductor
Not shown	49756 (1000)	1	Cable, 8 conductor

NOTES:

Foot Panel Assembly—P4062A (P1115 Bed with Toggle Switches)

Figure 5-19. Foot Panel Assembly—P4062A (P1115 Bed with Toggle Switches)

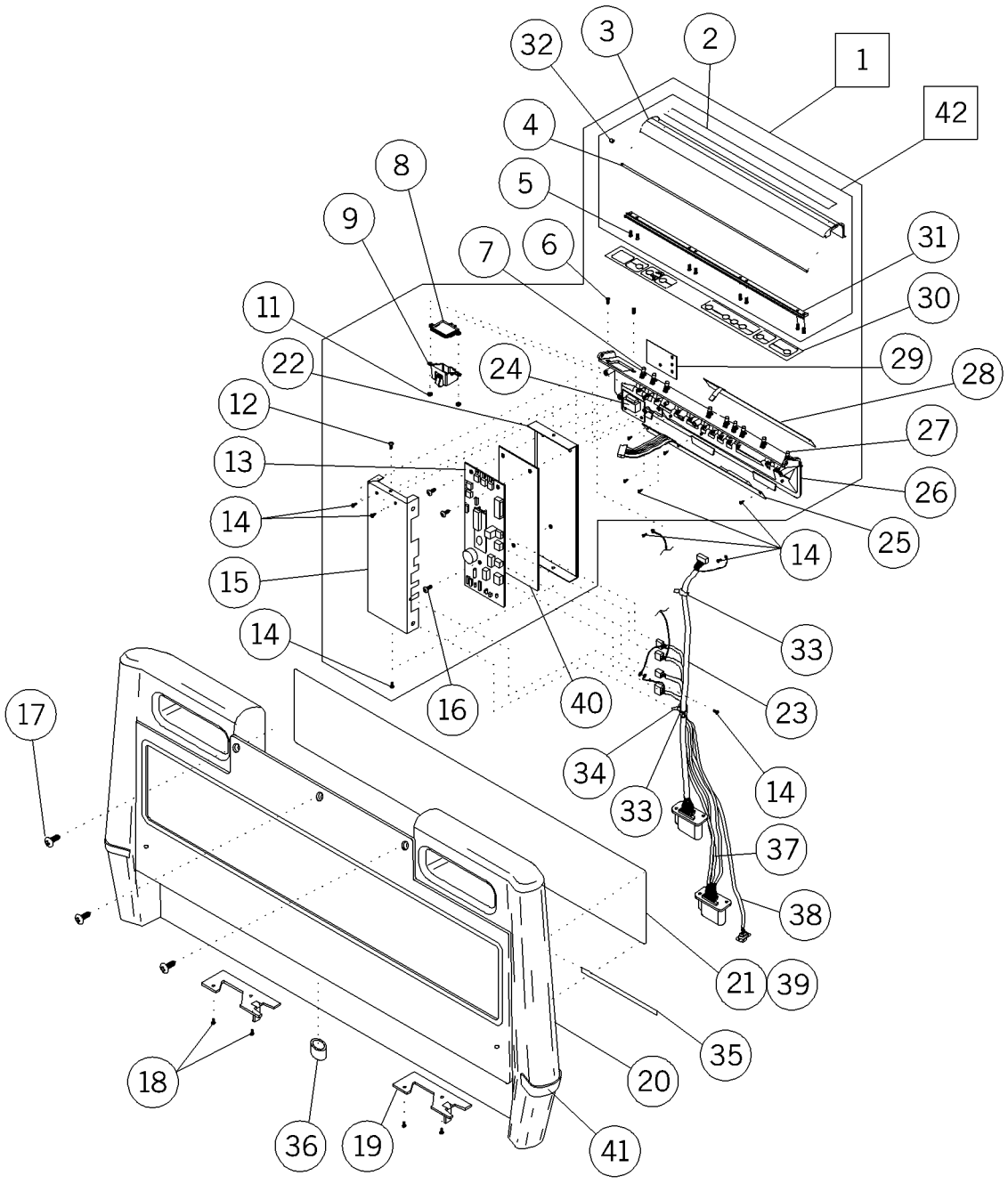

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Table 5-40. Foot Panel Assembly—P4062A (P1115 Bed with Toggle Switches)

Item Number	Part Number	Quantity	Description
1	44166-02 (1000) or 4428902 (1000)	1 1	Control panel assembly Control panel assembly, VIP beds only
2	42797 (1000)	1	Scale instruction label
3	42694 (1000)	1	Door assembly complete
4	39161 (1000)	1	Pin
5	90196-06 (1000)	8	Screw—hilow
6	90299-06 (1000)	2	Screw
7	30820-01 (1000)	3	Toggle switch—momentary
8	38609 (1000)	1	Window
9	38753 (1000)	1	Trendelenburg indicator assembly
10			
11	37890 (1000)	2	Keps nut
12	40211 (1000)	1	Plastic fastener
13	39506-01 (1000)	1	Scale micro board assembly
14	90029-05 (1000)	11	Screw
15	44537 (1000)	1	MPB box top assembly
16	393 (1000)	1	Screw
17	752 (1000)	3	Screw truss head
18	18252 (1000)	4	Screw
19	43604 (1000)	2	Receptacle bracket
20	40294 (1000)	1	Footboard shell assembly
21	38524 (1000)*	1	HPL insert
22	39638 (1000)	1	MPB box bottom
23	41383 (1000)	1	Nurse control cable—footboard
24	43154-02 (1000)	1	Nurse control flex circuit assembly
25	39452 (1000)	1	Scale display assembly
26	39464-01 (1000)	1	Control panel—scale
27	30819-01 (1000)	6	Toggle switch—on/on
28	40208 (1000)	1	Membrane switch overlay
29	39955-02 (1000)	1	LED overlay
30	43972-02 (1000)	1	Nurse control overlay

* Specify high pressure laminate color.

Item Number	Part Number	Quantity	Description
31	39159 (1000)	1	Aluminum extrusion plate
32	38529 (1000)	1	Torsion spring
33	19124 (1000)	2	Large cable tie
34	40421 (1000)	2	Cable tie mount
35	40310 (1000)	1	Caution label
36	12951 (1000)	1	Grommet
37	40237 (1000)	1	Scale cable assembly—footboard
38	40286 (1000)	1	Scale test cable
39	38525 (1000)	1	Adhesive tape
40	40887 (1000)	1	MPB fiche paper
41	38328 (1000)	1	Bumper
42	SA1555 (1000)	1	Door assembly (scale unit)

NOTES:

Foot Panel Assembly—P4062B (P1115 “C” and “E” Version Beds with Membrane Switches)

Figure 5-20. Foot Panel Assembly—P4062B (P1115 “C” and “E” Version Beds with Membrane Switches)

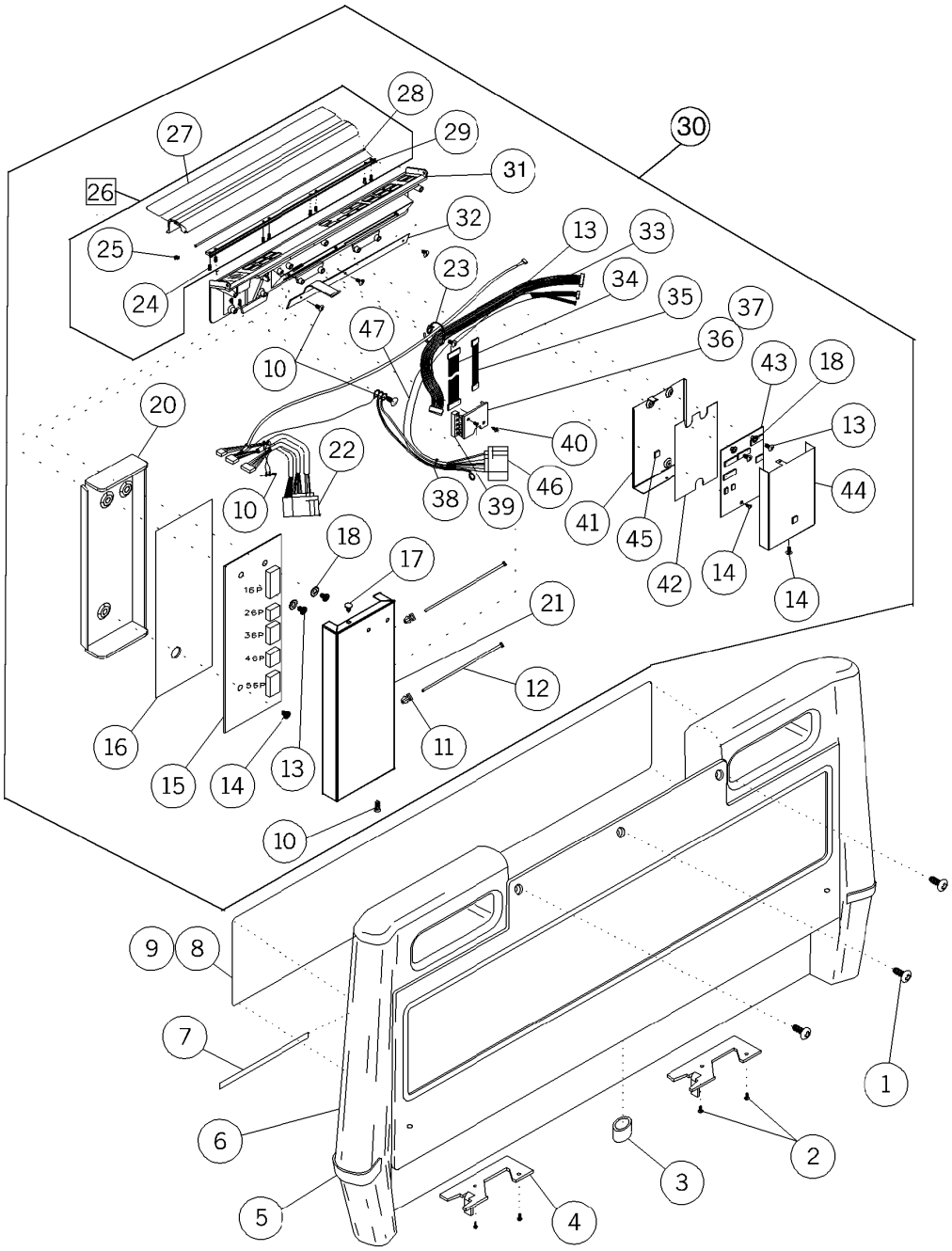

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Table 5-41. Foot Panel Assembly—P4062B (P1115 “C” and “E” Version Beds with Membrane Switches)

Item Number	Part Number	Quantity	Description
1	752 (1000)	3	Screw, truss head
2	18252 (1000)	4	Screw
3	12951 (1000)	1	Grommet
4	43604 (1000)	2	Receptacle bracket
5	38328(1000)	1	Bumper
6	40294 (1000)	1	Footboard shell assembly
7	40310 (1000)	1	Caution label
8	38524 (1000)*	1	HPL insert
9	38525 (1000)	1	Adhesive tape
10	9003008 (1000)	6	Screw
11	40421 (1000)	2	Cable tie mount
12	19124 (1000)	2	Cable tie
13	13206 (1000)	3	Screw
14	393H (1000)	3	Screw
15	3950601 (1000)	1	Scale micro board assembly
16	40887 (1000)	1	MPB fiche paper
17	40211 (1000)	1	Plastic fastener
18	15907 (1000)	4	Lock washer
19			
20	39638pl (1000)	1	MPB box bottom
21	39639pl (1000)	1	MPB box top
22	4480701 (1000)	1	Scale cable assembly
23	45708 (1000)	1	Wire tie
24	9019606 (1000)	6	Screw
25	38529 (1000)	1	Torsion spring
26	42694 (1000)	1	Door assembly complete
27	42797 (1000)	1	Scale instruction label
28	39161 (1000)	1	Pin
29	3915948 (1000)	1	Extrusion
30	4975811 (1000) or 4875808 (1000)	1 1	Control panel assembly, scale/no air or Control panel assembly, VIP, scale/no air

* Specify high pressure laminate color.

Item Number	Part Number	Quantity	Description
31	4975708 (1000) or 4975711 (1000)	1 1	Casting, key panel assembly, scale/no air or Casting, key panel assembly, VIP, scale/no air
32	3945201 (1000)	1	Scale display assembly
33	60108 (1000)	1	Cable, 14-conductor
34	49755 (1000)	1	Cable assembly, 12-conductor
35	49756 (1000)	1	Cable assembly, 8-conductor
36	4958102 (1000)	1	LED board assembly (scale, without air)
37			
38	14450 (1000)	1	Cable tie
39	45928 (1000)	1	Foam shield
40	11139 (1000)	2	Screw
41	44733pl (1000)	1	Interface box, bottom
42	44735 (1000)	1	Insulator
43	49578 (1000)	1	Membrane control board
44	44734pl (1000)	1	Interface box, top
45	45856 (1000)	1	Foam spacer
46	44806 (1000)	1	Cable, MFI/nurse control
47	4567020 (1000)	1	Ground strap cable

NOTES:

Foot Panel Assembly—P4062C (P1115 “F” Version Bed with Membrane Switches)

Figure 5-21. Foot Panel Assembly—P4062C (P1115 “F” Version Bed with Membrane Switches)

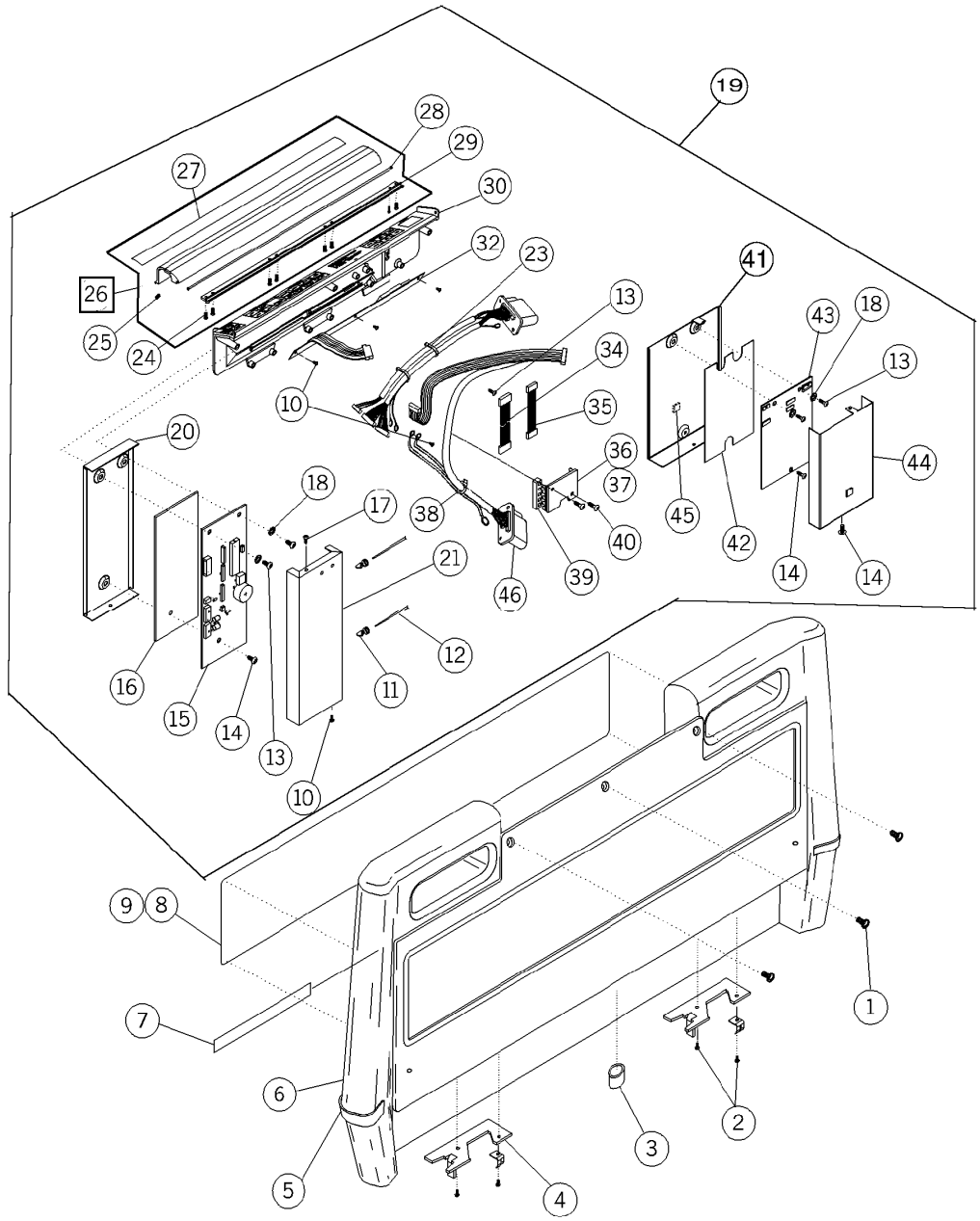

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Table 5-42. Foot Panel Assembly—P4062C (P1115 "F" Version Bed with Membrane Switches)

Item Number	Part Number	Quantity	Description
1	752 (1000)	3	Screw, truss head
2	18252 (1000)	4	Screw
3	12951 (1000)	1	Grommet
4	43604 (1000)	2	Receptacle bracket
5	38328(1000)	1	Bumper
6	40294 (1000)	1	Footboard shell assembly
7	40310 (1000)	1	Caution label
8	38524 (1000)*	1	HPL insert
9	38525 (1000)	1	Adhesive tape
10	9003008 (1000)	6	Screw
11	40421 (1000)	2	Cable tie mount
12	19124 (1000)	2	Cable tie
13	13206 (1000)	3	Screw
14	393H (1000)	3	Screw
15	61205 (1000)	1	Scale micro board assembly
16	40887 (1000)	1	MPB fiche paper
17	40211 (1000)	1	Plastic fastener
18	15907 (1000)	4	Lock washer
19	6263109 (1000) or 6263107 (1000)	1 1	Control panel assembly, scale/no air or Control panel assembly, VIP, scale/no air
20	39638pl (1000)	1	MPB box bottom
21	39639pl (1000)	1	MPB box top
22	61597 (1000)	1	Scale cable assembly
23	45708 (1000)	1	Wire tie
24	9019606 (1000)	6	Screw
25	38529 (1000)	1	Torsion spring
26	42694 (1000)	1	Door assembly complete
27	42797 (1000)	1	Scale instruction label
28	39161 (1000)	1	Pin
29	3915948 (1000)	1	Extrusion

* Specify high pressure laminate color.

Item Number	Part Number	Quantity	Description
30	6274508 (1000) or 6274511 (10000	1 1	Membrane assembly, scale, no air or Membrane assembly, VIP, scale, no air
31			
32	49584 (1000)	1	Scale display assembly
33	60108 (1000)	1	Cable—14-conductor
34	49755 (1000)	1	Cable assembly, 12-conductor
35	49756 (1000)	1	Cable assembly, 8-conductor
36	4958102 (1000)	1	LED board assembly (scale, without air)
37			
38	14450 (1000)	1	Cable tie
39	45928 (1000)	1	Foam shield
40	11139 (1000)	2	Screw
41	44733pl (1000)	1	Interface box, bottom
42	44735 (1000)	1	Insulator
43	49578 (1000)	1	Membrane interface pcb assembly
44	44734pl (1000)	1	Interface box, top
45	45856 (1000)	1	Foam spacer
46	44806 (1000)	1	Cable, MFI/nurse control
47	4567020 (1000)	1	Ground strap cable

NOTES:

Foot Panel Assembly—P4063A (P1135 Bed with Toggle Switches)

Figure 5-22. Foot Panel Assembly—P4063A (P1135 Bed with Toggle Switches)

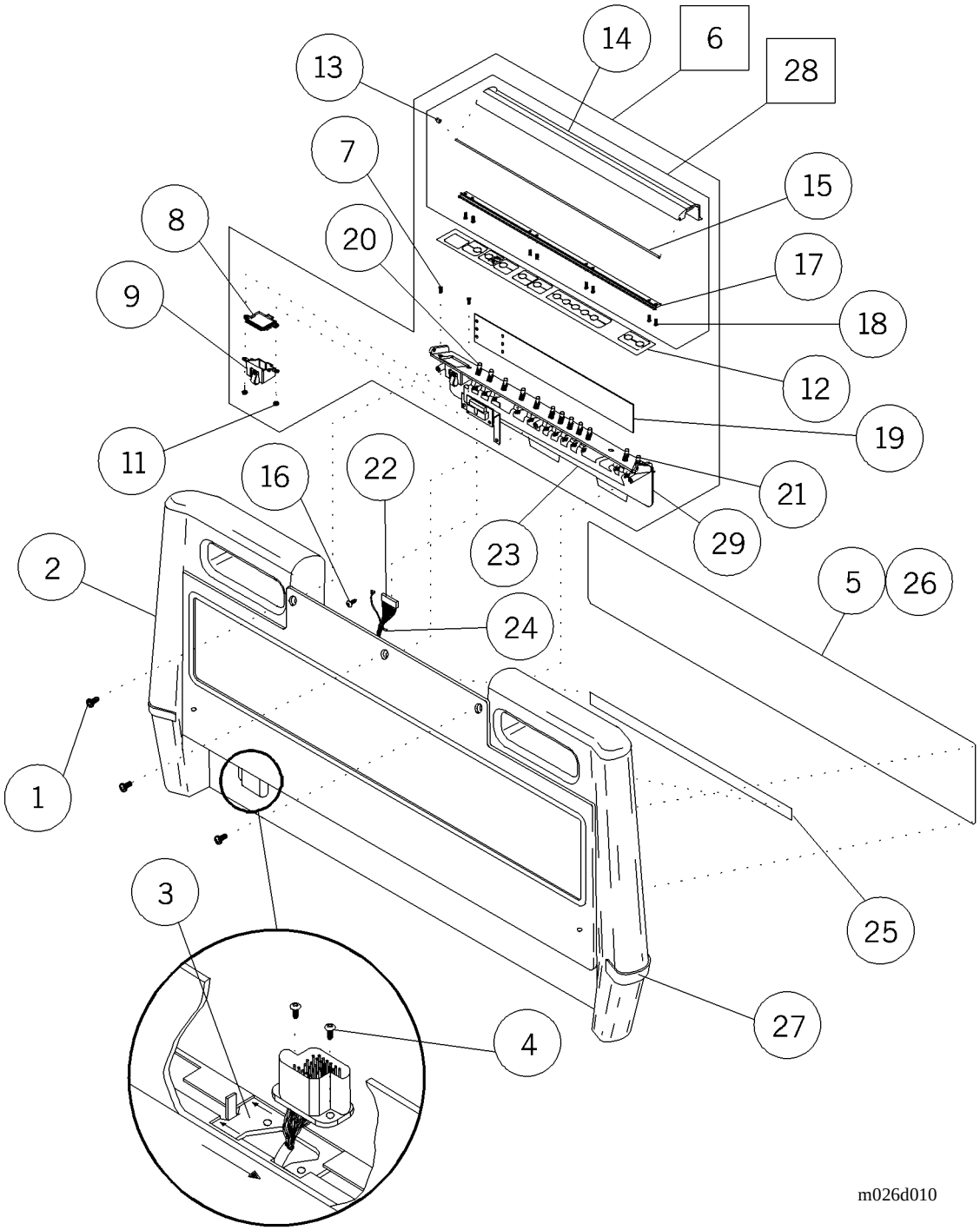

Table 5-43. Foot Panel Assembly—P4063A (P1135 Bed with Toggle Switches)

Item Number	Part Number	Quantity	Description
1	752 (1000)	3	Screw truss head
2	40294 (1000)	1	Footboard shell assembly
3	43604 (1000)	1	Receptacle bracket
4	18252 (1000)	2	Screw
5	38524 (1000)*	1	HPL insert
6	44165-01 (1000) or 4428903 (1000)	1 1	Control panel assembly or Control panel assembly, VIP only
7	90299-06 (1000)	2	Screw
8	38609 (1000)	1	Window
9	38753 (1000)	1	Trendelenburg indicator assembly
10			
11	37890 (1000)	2	Keps nut
12	43972-03 (1000)	1	Nurse control overlay
13	38529 (1000)	1	Torsion spring
14	38883 (1000)	1	Door assembly—complete
15	39161 (1000)	1	Pin
16	90029-05 (1000)	1	Screw
17	39159 (1000)	1	Aluminum extrusion plate
18	90196-06 (1000)	8	Screw—hilow
19	40389-01 (1000)	1	LED overlay
20	30820-01 (1000)	4	Toggle switch—momentary
21	30819-01 (1000)	8	Toggle switch—on/on
22	41383 (10000	1	Nurse control cable—footboard
23	43154-03 (1000)	1	Nurse control flex circuit assembly
24	19124 (10000	1	Large cable tie
25	40310 (1000)	1	Caution label
26	38525 (10000	1	Adhesive tape
27	38328 (1000)	1	Bumper
28	SA1554 (1000)	1	Door assembly—without scale unit
29	39595-01 (1000)	1	Control housing—no scale

* Specify high pressure laminate color.

Foot Panel Assembly—P4063B (P1135 “C” and “E” Version Beds with Membrane Switches)

Figure 5-23. Foot Panel Assembly—P4063B (P1135 “C” and “E” Version Beds with Membrane Switches)

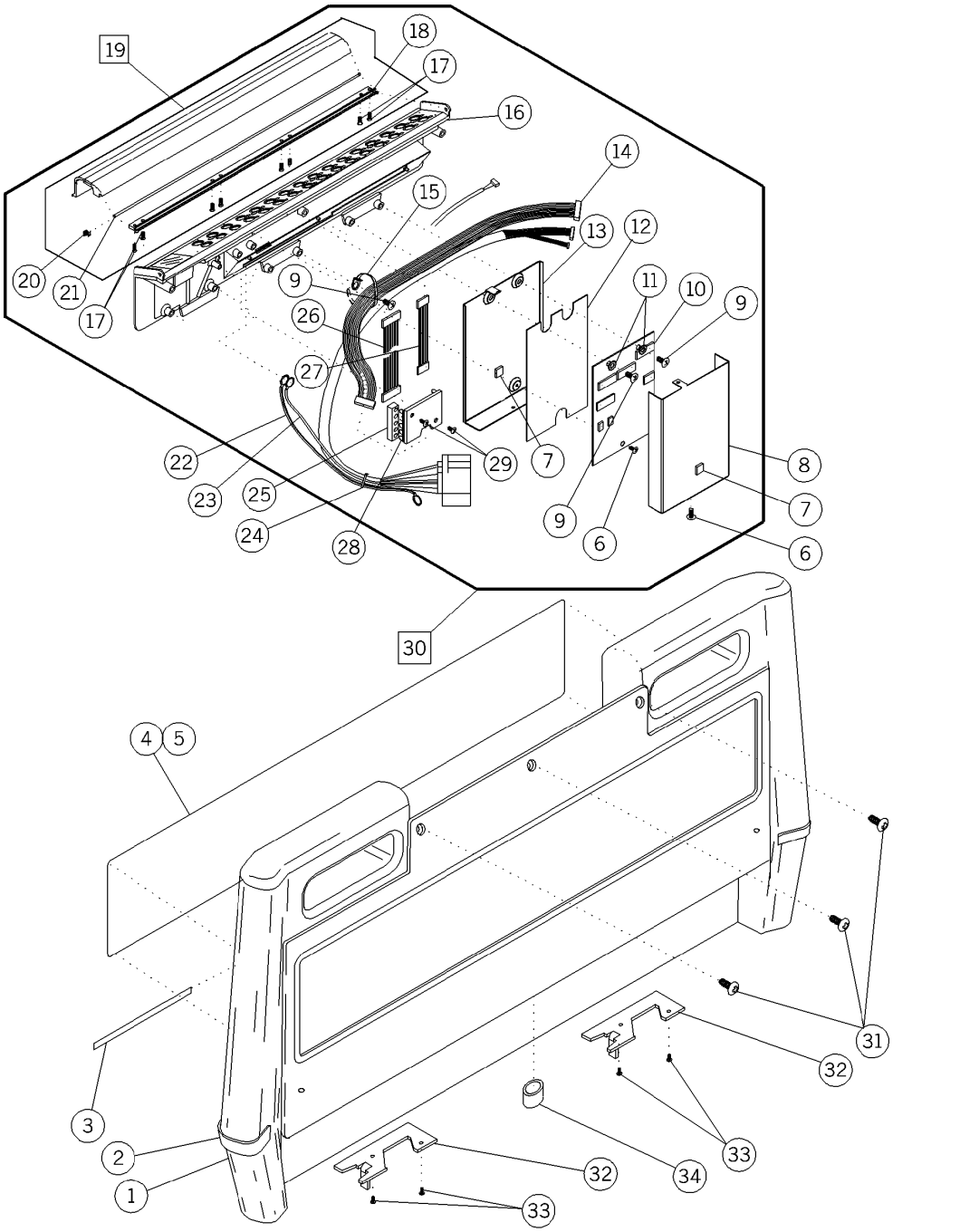

Table 5-44. Foot Panel Assembly—P4063B (P1135 "C" and "E" Version Beds with Membrane Switches)

Item Number	Part Number	Quantity	Description
1	40294 (1000)	1	Footboard shell assembly
2	38328 (1000)	2	Bumper
3	40310 (1000)	1	Caution label
4	38524 (1000)*	1	HPL insert
5	38525 (1000)	1	Adhesive tape
6	393 (1000)	2	Screw
7	45856 (1000)	2	Foam spacer
8	44734-pl (1000)	1	Interface, box top
9	13206 (1000)	3	Screw
10	49578 (1000)	1	Membrane control board
11	15907 (1000)	2	Lockwasher
12	44735 (1000)	1	Insulator
13	44733-pl (1000)	1	Interface, box bottom
14	60108 (1000)	1	Cable, 14-conductor
15	45708 (1000)	1	Wire tie
16	4975702 (1000) or 4975705 (1000)	1 1	Casting key panel, no scale, DynamicAire or Casting key panel, VIP, no scale, Dynamic-Aire
17	90196-06 (1000)	8	Screw—hilow
18	39159 (1000)	1	Aluminum extrusion plate
19	38883 (1000)	1	Door assembly—complete
20	38529 (1000)	1	Torsion spring
21	39161 (1000)	1	Pin
22	45670-20 (10000	1	Cable, ground strap
23	44806 (1000)	1	Cable, MFI/nurse control
24	14450 (10000	1	Small cable tie
25	45928 (1000)	1	Foam shield
26	49755 (10000	1	Cable assembly, 12-conductor
27	49756 (1000)	1	Cable assembly, 8-conductor
28	4958101 (1000)	1	Power control board assembly, membrane LED, with air

* Specify high pressure laminate color.

Item Number	Part Number	Quantity	Description
29	11139 (1000)	2	Screw
30	4975802 (1000) or 4975805 (1000)	1 1	Control panel assembly, DynamicAire, no scale or Control panel assembly, VIP, DynamicAire, no scale
31	752 (1000)	3	Screw, truss head
32	43604 (1000)	2	Receptacle bracket
33	18252 (1000)	4	Screw
34	12951 (1000)	1	Grommet

NOTES:

Foot Panel Assembly—P4063C (P1135 “F” Version Bed with Membrane Switches)

Figure 5-24. Foot Panel Assembly—P4063C (P1135 “F” Version Bed with Membrane Switches)

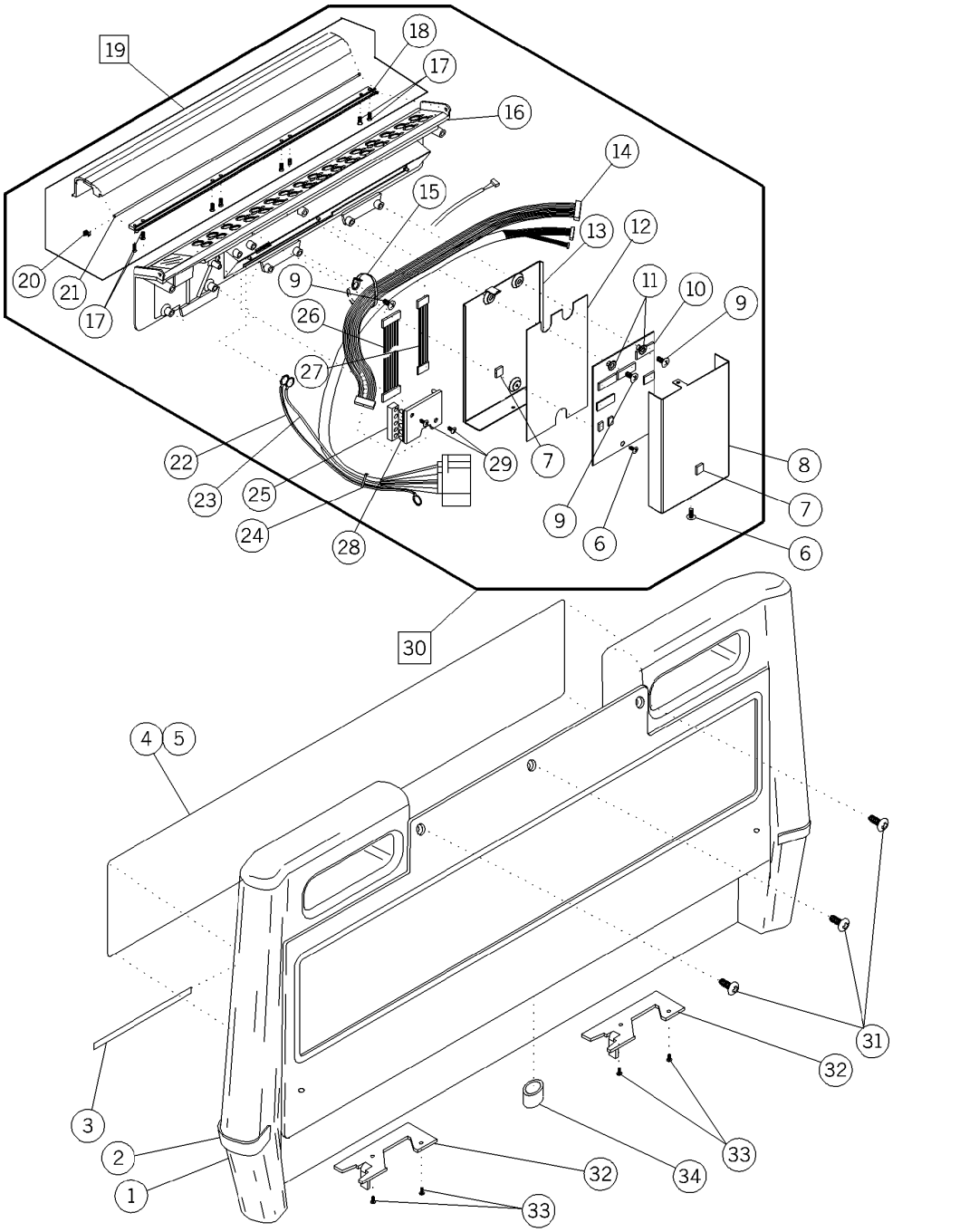

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Table 5-45. Foot Panel Assembly—P4063C (P1135 "F" Version Bed with Membrane Switches)

Item Number	Part Number	Quantity	Description
1	40294 (1000)	1	Footboard shell assembly
2	38328 (1000)	2	Bumper
3	40310 (1000)	1	Caution label
4	38524 (1000)*	1	HPL insert
5	38525 (1000)	1	Adhesive tape
6	393 (1000)	2	Screw
7	45856 (1000)	2	Foam spacer
8	44734-pl (1000)	1	Interface, box top
9	13206 (1000)	3	Screw
10	49578 (1000)	1	Membrane control board
11	15907 (1000)	2	Lockwasher
12	44735 (1000)	1	Insulator
13	44733-pl (1000)	1	Interface, box bottom
14	60108 (1000)	1	Cable, 14-conductor
15	45708 (1000)	1	Wire tie
16	6274502 (1000) or 6274505 (1000)	1 1	Casting key panel, no scale, DynamicAire or Casting key panel, VIP, no scale, Dynamic-Aire
17	90196-06 (1000)	8	Screw—hilow
18	39159 (1000)	1	Aluminum extrusion plate
19	38883 (1000)	1	Door assembly—complete
20	38529 (1000)	1	Torsion spring
21	39161 (1000)	1	Pin
22	45670-20 (10000	1	Cable, ground strap
23	44806 (1000)	1	Cable, MFI/nurse control
24	14450 (10000	1	Small cable tie
25	45928 (1000)	1	Foam shield
26	49755 (10000	1	Cable assembly, 12-conductor
27	49756 (1000)	1	Cable assembly, 8-conductor
28	4958101 (1000)	1	Power control board assembly, membrane LED, with air

* Specify high pressure laminate color.

Item Number	Part Number	Quantity	Description
29	11139 (1000)	2	Screw
30	6263104 (1000) or 6263106 (1000)	1 1	Control panel assembly, DynamicAire, no scale or Control panel assembly, VIP, DynamicAire, no scale
31	752 (1000)	3	Screw, truss head
32	43604 (1000)	2	Receptacle bracket
33	18252 (1000)	4	Screw
34	12951 (1000)	1	Grommet

NOTES:

Foot Panel Assembly—P4064A (P1145 Bed with Toggle Switches)

Figure 5-25. Foot Panel Assembly—P4064A (P1145 Bed with Toggle Switches)

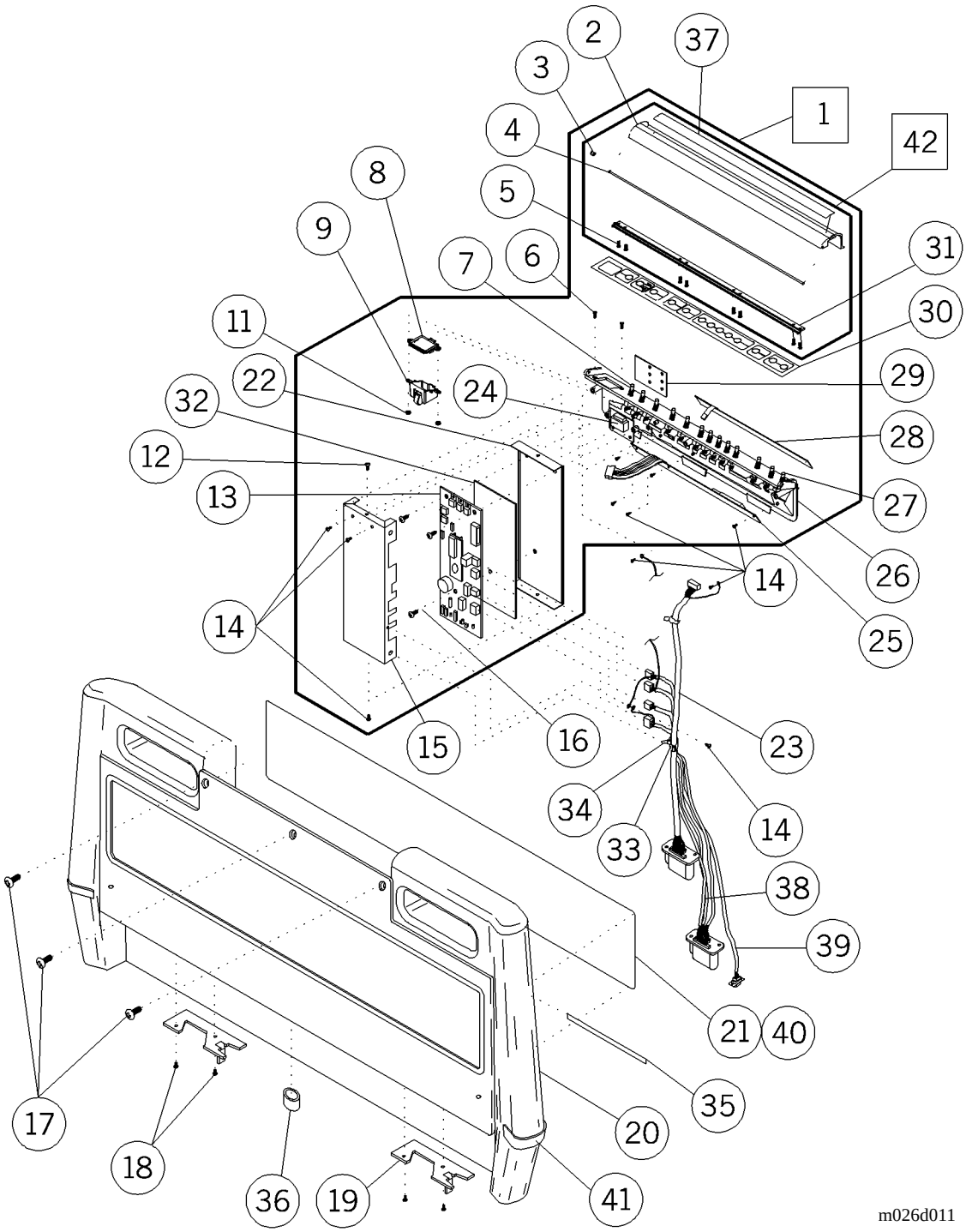

Table 5-46. Foot Panel Assembly—P4064A (P1145 Bed with Toggle Switches)

Item Number	Part Number	Quantity	Description
1	44166-01 (1000) or 4428904 (1000)	1 1	Control panel assembly or Control panel assembl, VIP only
2	42694 (1000)	1	Door assembly complete
3	38529 (1000)	1	Torsion spring
4	39161 (1000)	1	Pin
5	90196-06 (1000)	8	Screw—hilow
6	90299-06 (1000)	2	Screw
7	30820-01 (1000)	4	Toggle switch—momentary
8	38609 (1000)	1	Window
9	38753 (1000)	1	Trendelenburg indicator assembly
10			
11	37890 (1000)	2	Keps nut
12	40211 (1000)	1	Plastic fastener
13	39506-01 (1000)	1	Scale micro board assembly
14	90029-05 (1000)	11	Screw
15	44537 (1000)	1	MPB box top assembly
16	393 (1000)	1	Screw
17	752 (1000)	3	Screw truss head
18	18252 (1000)	4	Screw
19	43604 (1000)	2	Receptacle bracket
20	40294 (1000)	1	Footboard shell assembly
21	38524 (1000)*	1	HPL insert
22	39638 (1000)	1	MPB box bottom
23	41383 (1000)	1	Nurse control cable—footboard
24	43154-04 (1000)	1	Nurse control flex circuit assembly
25	39452 (1000)	1	Scale display assembly
26	39464-01 (1000)	1	Control panel—scale
27	30819-01 (1000)	9	Toggle switch—on/on
28	40208 (1000)	1	Membrane switch overlay
29	39955-01 (1000)	1	LED overlay
30	43972-01 (1000)	1	Nurse control overlay

* Specify high pressure laminate color.

Item Number	Part Number	Quantity	Description
31	39159 (1000)	1	Aluminum extrusion plate
32	40887 (1000)	1	MPB fiche paper
33	19124 (1000)	2	Large cable tie
34	40421 (1000)	2	Cable tie mount
35	40310 (1000)	1	Caution label
36	12951 (1000)	1	Grommet
37	42797 (1000)	1	Scale instruction label
38	40237 (1000)	1	Scale cable assembly—footboard
39	40286 (1000)	1	Scale test cable
40	38525 (1000)	1	Adhesive tape
41	38328 (1000)	1	Bumper
42	SA1555 (1000)	1	Door assembly (scale unit)

NOTES:

Foot Panel Assembly—P4064B (P1145 "C" and "E" Version Beds with Membrane Switches)

Figure 5-26. Foot Panel Assembly—P4064B (P1145 "C" and "E" Version Beds with Membrane Switches)

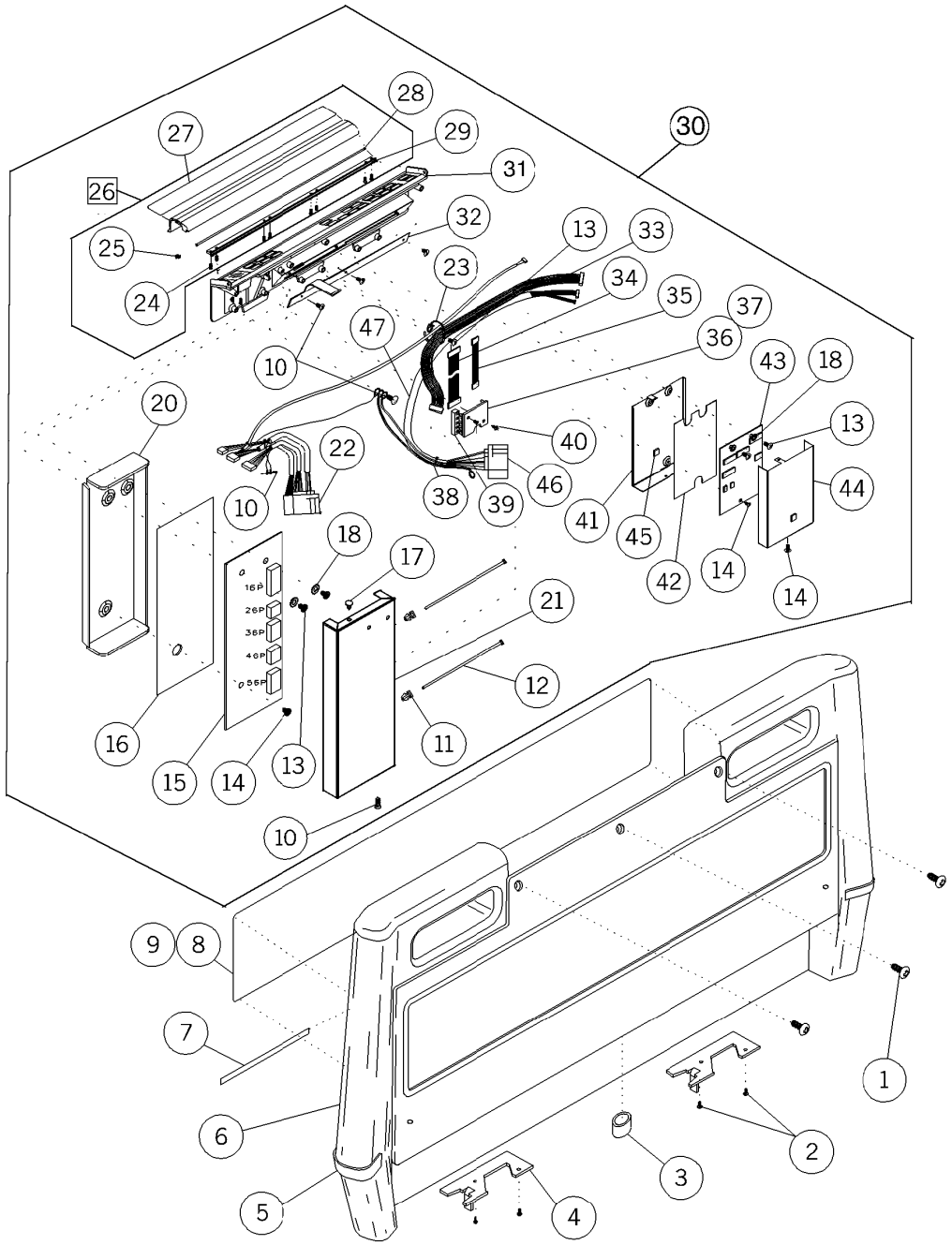

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Table 5-47. Foot Panel Assembly—P4064B (P1145 “C” and“E” Version Beds with Membrane Switches)

Item Number	Part Number	Quantity	Description
1	752 (1000)	3	Screw, truss head
2	18252 (1000)	4	Screw
3	12951 (1000)	1	Grommet
4	43604 (1000)	2	Receptacle bracket
5	38328(1000)	1	Bumper
6	40294 (1000)	1	Footboard shell assembly
7	40310 (1000)	1	Caution label
8	38524 (1000)*	1	HPL insert
9	38525 (1000)	1	Adhesive tape
10	9003008 (1000)	6	Screw
11	40421 (1000)	2	Cable tie mount
12	19124 (1000)	2	Cable tie
13	13206 (1000)	3	Screw
14	393H (1000)	3	Screw
15	3950601 (1000)	1	Scale micro board assembly
16	40887 (1000)	1	MPB fiche paper
17	40211 (1000)	1	Plastic fastener
18	15907 (1000)	4	Lock washer
19	40206 (1000)	1	Scale test cable
20	39638pl (1000)	1	MPB box bottom
21	39639pl (1000)	1	MPB box top
22	4480701 (1000)	1	Scale cable assembly
23	45708 (1000)	1	Wire tie
24	9019606 (1000)	6	Screw
25	38529 (1000)	1	Torsion spring
26	42694 (1000)	1	Door assembly complete
27	42797 (1000)	1	Scale instruction label
28	39161 (1000)	1	Pin
29	3915948 (1000)	1	Extrusion

* Specify high pressure laminate color.

Item Number	Part Number	Quantity	Description
30	4975812 (1000) or 4975809 (1000)	1 1	Control panel assembly (scale with Dynamic-Aire) or Control panel assembly, VIP (scale with DynamicAire)
31	4975709 (1000) or 4975702 (1000)	1 1	Casting key panel (scale, with DynamicAire) or Casting key panel, VIP (scale, with Dynam-icAire)
32	3945201 (1000)	1	Scale display assembly
33	60108 (1000)	1	Cable-14 conductor
34	49755 (1000)	1	Cable assembly, 12 conductor
35	49756 (1000)	1	Cable assembly, 8 conductor
36			
37	4958102 (1000)	1	LED board assembly (scale with DynamicAire)
38	14450 (1000)	1	Cable tie
39	45928 (1000)	1	Foam shield
40	11139 (1000)	2	Screw
41	44733pl (1000)	1	Interface box, bottom
42	44735 (1000)	1	Insulator
43	49578 (1000)	1	Membrane control board
44	44734pl (1000)	1	Interface box, top
45	45856 (1000)	1	Foam spacer
46	44806 (1000)	1	Cable, MFI/nurse control
47	4567020 (1000)	1	Ground strap cable

NOTES:

Foot Panel Assembly—P4064C (P1145 “F” Version Bed with Membrane Switches)

Figure 5-27. Foot Panel Assembly—P4064C (P1145 “F” Version Bed with Membrane Switches)

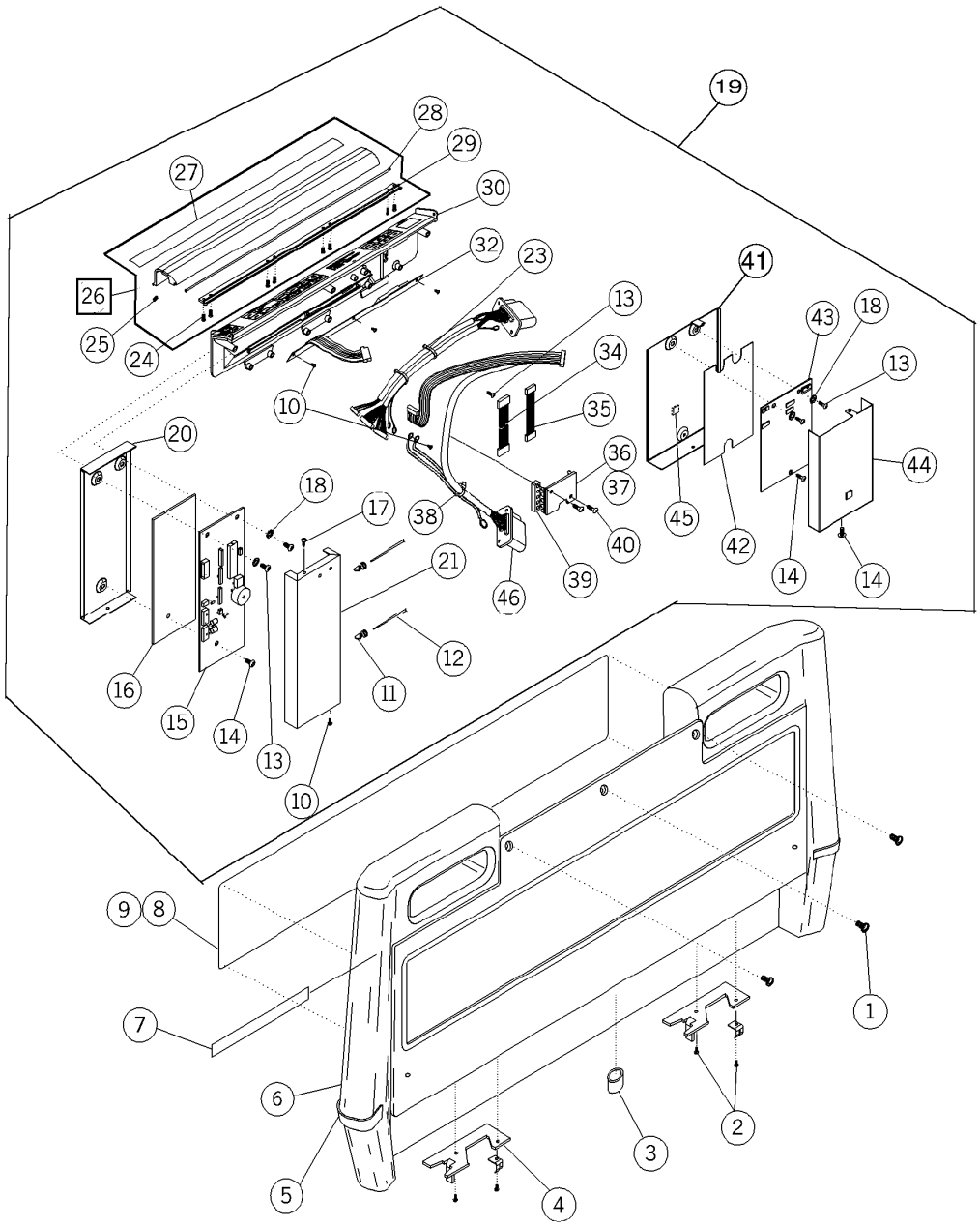

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Table 5-48. Foot Panel Assembly—P4064C (P1145 "F" Version Bed with Membrane Switches)

Item Number	Part Number	Quantity	Description
1	752 (1000)	3	Screw, truss head
2	18252 (1000)	4	Screw
3	12951 (1000)	1	Grommet
4	43604 (1000)	2	Receptacle bracket
5	38328(1000)	1	Bumper
6	40294 (1000)	1	Footboard shell assembly
7	40310 (1000)	1	Caution label
8	38524 (1000)*	1	HPL insert
9	38525 (1000)	1	Adhesive tape
10	9003008 (1000)	6	Screw
11	40421 (1000)	2	Cable tie mount
12	19124 (1000)	2	Cable tie
13	13206 (1000)	3	Screw
14	393H (1000)	3	Screw
15	61205 (1000)	1	Scale micro board assembly
16	40887 (1000)	1	MPB fiche paper
17	40211 (1000)	1	Plastic fastener
18	15907 (1000)	4	Lock washer
19	6263110 (1000) or 6263108 (1000)	1 1	Control panel assembly (scale with Dynamic-Aire) or Control panel assembly, VIP (scale with DynamicAire)
20	39638pl (1000)	1	MPB box bottom
21	39639pl (1000)	1	MPB box top
22	61597 (1000)	1	Scale cable assembly
23	45708 (1000)	1	Wire tie
24	9019606 (1000)	6	Screw
25	38529 (1000)	1	Torsion spring
26	42694 (1000)	1	Scale door assembly
27	42797 (1000)	1	Scale instruction label
28	39161 (1000)	1	Pin

* Specify high pressure laminate color.

Item Number	Part Number	Quantity	Description
29	3915948 (1000)	1	Extrusion
30	6274509 (1000) or 6274512 (1000)	1 1	Casting key panel (scale, with DynamicAire) or Casting key panel, VIP (scale, with DynamicAire)
31			
32	49584 (1000)	1	Scale display assembly
33	60108 (1000)	1	Cable—14 conductor
34	49755 (1000)	1	Cable assembly, 12 conductor
35	49756 (1000)	1	Cable assembly, 8 conductor
36			
37	4958102 (1000)	1	LED board assembly (scale with DynamicAire)
38	14450 (1000)	1	Cable tie
39	45928 (1000)	1	Foam shield
40	11139 (1000)	2	Screw
41	44733pl (1000)	1	Interface box, bottom
42	44735 (1000)	1	Insulator
43	49578 (1000)	1	Membrane interface pcb assembly
44	44734pl (1000)	1	Interface box, top
45	45856 (1000)	1	Foam spacer
46	44806 (1000)	1	MFI/INC cable
47	4567020 (1000)	1	Ground strap cable

NOTES:

Footboard—P4165A (P1155 “C” and “E” Version Beds)

Figure 5-28. Footboard—P4165A (P1155 “C” and “E” Version Beds)

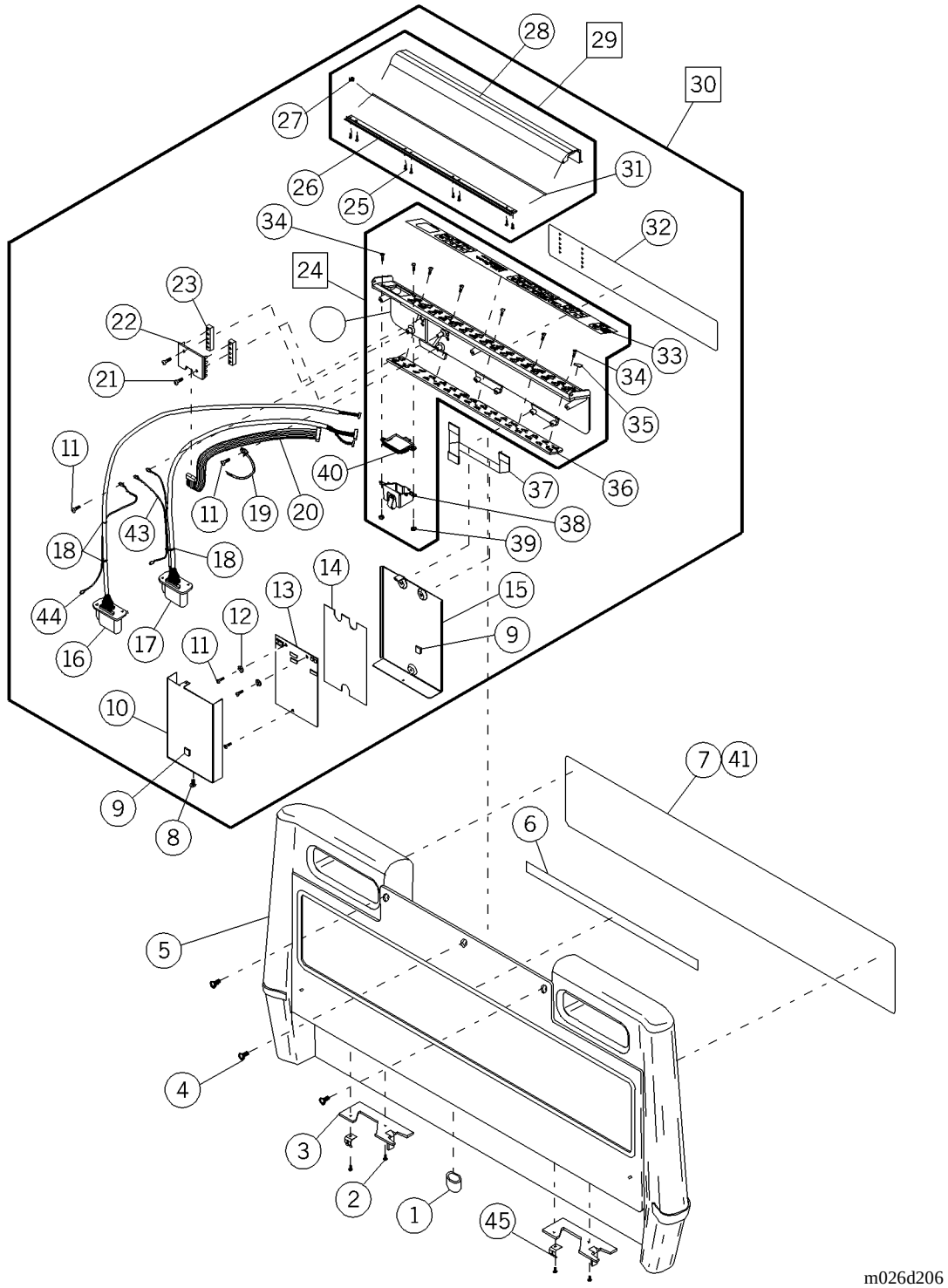

Table 5-49. Footboard—P4165A (P1155 “C” and “E” Version Beds)

Item Number	Part Number	Quantity	Description
1	12951 (1000)	1	Grommet
2	90037-04 (1000)	4	Screw, thread cutting
3	43604 (1000)	2	Receptacle bracket
4	752 (1000)	3	Screw truss head
5	40294 (1000)	1	Footboard shell assembly
6	40310-01 (1000)	1	Caution label
7	38524 (1000)*	1	HPL insert
8	393 (1000)	2	Screw
9	45856 (1000)	2	Foam spacer
10	44734-PL (1000)	1	Interface, box top
11	13206 (1000)	5	Screw
12	15907 (1000)	4	Lockwasher
13	44805 (1000)	1	PCB assembly, membrane interface
14	44735 (1000)	1	Insulator
15	44733-PL (1000)	1	Interface, box bottom
16	44808-02 (1000)	1	Cable MKI/net non-scale
17	44806 (1000)	1	Cable, MFI/nurse control
18	14450 (1000)	3	Small cable tie
19	45708 (1000)	1	Wire tie
20	44809 (1000)	1	Cable, MKI/LED board
21	90030-08 (1000)	5	Screw
22	44732 (1000)	1	LED board assembly
23	45928 (1000)	2	Foam shield
24	4975703 (1000) or 4975706 (1000)	1 1	Casting key panel, no scale, with ZoneAire Sleep Surface Casting key panel, VIP, no scale, with ZoneAire Sleep Surface
25	90196-06 (1000)	8	Screw—hilow
26	39159 (1000)	1	Aluminum extrusion plate
27	38529 (1000)	1	Torsion spring
28	38883 (1000)	1	Door assembly—complete
29	SA1554 (1000)	1	Door assembly—without scale unit

* Specify high pressure laminate color.

Item Number	Part Number	Quantity	Description
30	4975803 (1000) or 4975806 (1000)	1 1	Control panel assembly, no scale with ZoneAire Sleep Surface Control panel assembly, VIP, no scale with ZoneAire Sleep Surface
31	39161 (1000)	1	Pin
32	45660-03 (1000)	1	LED overlay, no scale with ZoneAire Sleep Surface
33	Not sold separately	—	Membrane overlay, no scale with ZoneAire Sleep Surface
34	Not sold separately	—	Screw
35	Not sold separately	—	Plunger
36	Not sold separately	—	Key panel, membrane switch
37	44810-02 (1000)	1	Cable, folded MFI/key panel
38	Not sold separately	—	Trendelenburg indicator housing
39	Not sold separately	—	Keps nut
40	Not sold separately	—	Window
41	38525 (1000)	1	Adhesive tape
42	Not sold separately	—	Membrane assembly, no scale, ZoneAire Sleep Surface
43	45670-20 (1000)	1	Cable, ground strap
44	45670-24 (1000)	1	Cable, ground strap
45	45665 (1000)	2	Ground clip

NOTES:

Footboard—P4165B (P1155 “F” Version Bed)

Figure 5-29. Footboard—P4165B (P1155 “F” Version Bed)

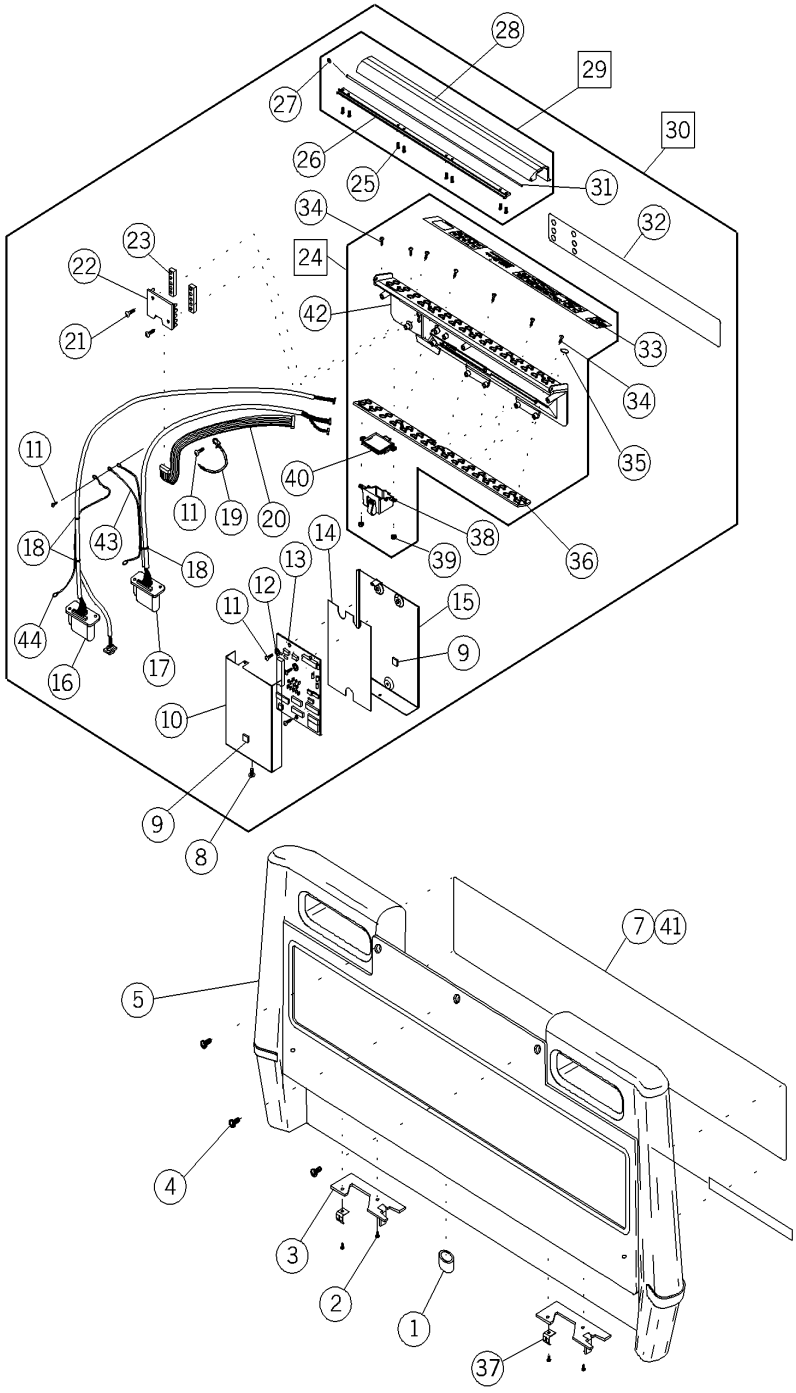

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Table 5-50. Footboard—P4165B (P1155 "F" Version Bed)

Item Number	Part Number	Quantity	Description
1	12951 (1000)	1	Grommet
2	90037-04 (1000)	4	Screw, thread cutting
3	43604 (1000)	2	Receptacle bracket
4	752 (1000)	3	Screw truss head
5	40294 (1000)	1	Footboard shell assembly
6	40310-01 (1000)	1	Caution label
7	38524 (1000)*	1	HPL insert
8	393 (1000)	2	Screw
9	45856 (1000)	2	Foam spacer
10	44734-PL (1000)	1	Interface, box top
11	13206 (1000)	5	Screw
12	15907 (1000)	4	Lockwasher
13	6273801 (1000)	1	PCB assembly, membrane interface
14	44735 (1000)	1	Insulator
15	44733-PL (1000)	1	Interface, box bottom
16	44808-02 (1000)	1	Cable MKI/net non-scale
17	44806 (1000)	1	Cable, MFI/nurse control
18	14450 (1000)	3	Small cable tie
19	45708 (1000)	1	Wire tie
20	60108 (1000)	1	Cable, 14-conductor
21	90030-08 (1000)	5	Screw
22	44732 (1000)	1	LED board assembly
23	45928 (1000)	2	Foam shield
24	6274503 (1000) or 6274506 (1000)	1 1	Casting key panel, no scale, ZoneAire Sleep Surface Casting key panel, VIP, no scale, ZoneAire Sleep Surface
25	90196-06 (1000)	8	Screw—hilow
26	39159 (1000)	1	Aluminum extrusion plate
27	38529 (1000)	1	Torsion spring
28	38883 (1000)	1	Door assembly—complete
29	SA1554 (1000)	1	Door assembly—without scale unit

* Specify high pressure laminate color.

Item Number	Part Number	Quantity	Description
30	6263111(1000) or 6263112 (1000)	1 1	Control panel assembly, no scale with ZoneAire Sleep Surface Control panel assembly, VIP, no scale with ZoneAire Sleep Surface
31	39161 (1000)	1	Pin
32	45660-03 (1000)	1	LED overlay, no scale with ZoneAire Sleep Surface
33	Not sold separately	—	Membrane overlay, no scale with ZoneAire Sleep Surface
34	Not sold separately	—	Screw
35	Not sold separately	—	Plunger
36	Not sold separately	—	Key panel, membrane switch
37	62742 (1000)	1	15-position cable
38	49755 (1000)		12-position cable
39	Not sold separately	—	Trendelenburg indicator housing
40	Not sold separately	—	Keps nut
41	Not sold separately	—	Window
42	38525 (1000)	1	Adhesive tape
42	Not sold separately	—	Membrane assembly, no scale, ZoneAire Sleep Surface
44	45670-20 (1000)	1	Cable, ground strap
45	45670-24 (1000)	1	Cable, ground strap
46	45665 (1000)	2	Ground clip

NOTES:

Footboard with Scale—P4166A (P1165 “C” and “E” Version Beds)

Figure 5-30. Footboard with Scale—P4166A (P1165 “C” and “E” Version Beds)

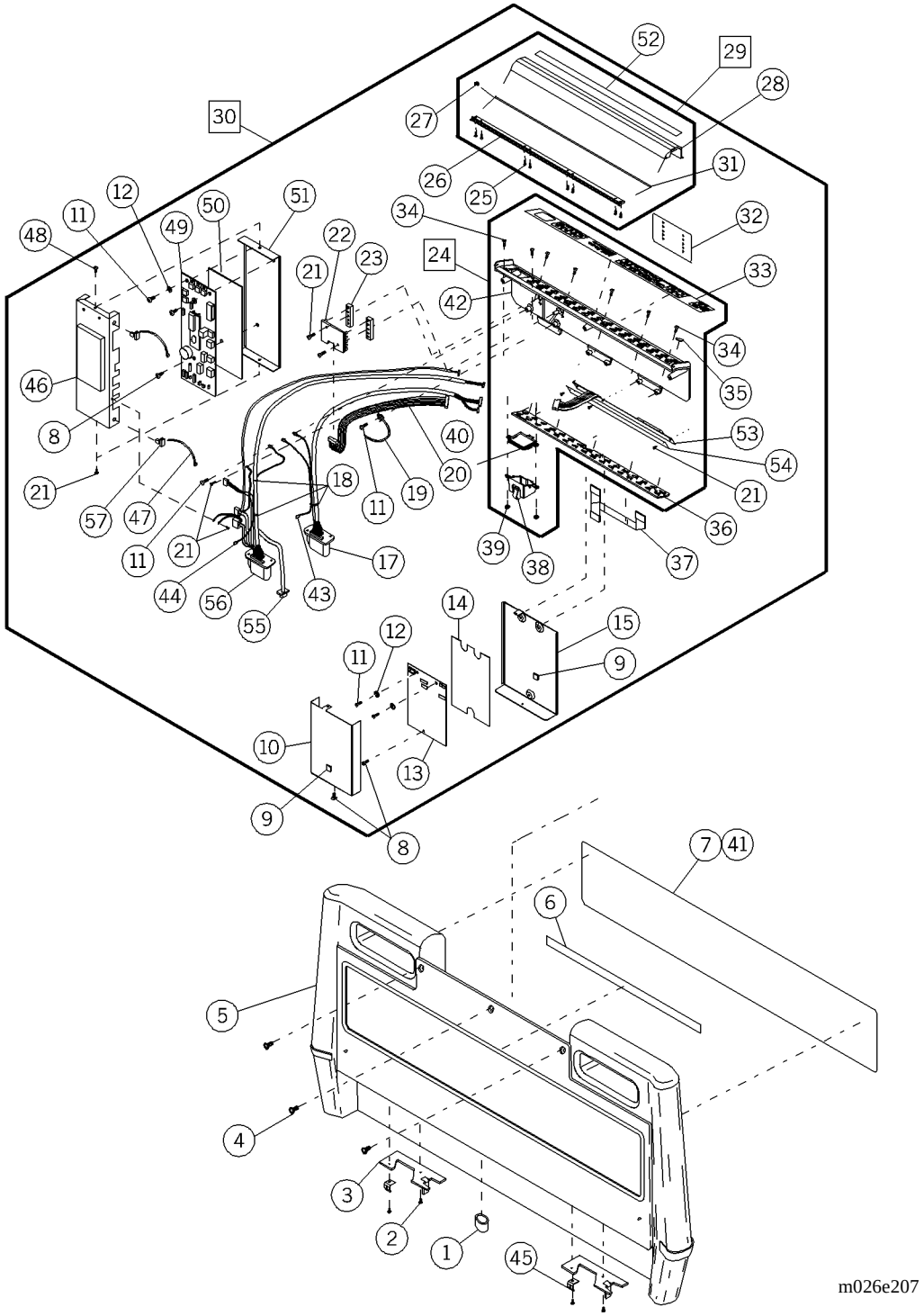

Table 5-51. Footboard with Scale—P4166A (P1165 "C" and "E" Version Beds)

Item Number	Part Number	Quantity	Description
1	12951 (1000)	1	Grommet
2	90037-04 (1000)	4	Screw, thread cutting
3	43604 (1000)	2	Receptacle bracket
4	752 (1000)	3	Screw truss head
5	40294 (1000)	1	Footboard shell assembly
6	40310-01 (1000)	1	Caution label
7	38524 (1000)*	1	HPL insert
8	393 (1000)	2	Screw
9	45856 (1000)	2	Foam spacer
10	44734-PL (1000)	1	Interface, box top
11	13206 (1000)	5	Screw
12	15907 (1000)	4	Lockwasher
13	44805 (1000)	1	PCB assembly, membrane interface
14	44735 (1000)	1	Insulator
15	44733-PL (1000)	1	Interface, box bottom
16	44808-01 (1000)	1	Cable MKI/net scale
17	44806 (1000)	1	Cable, MFI/nurse control
18	14450 (1000)	3	Small cable tie
19	45708 (1000)	1	Wire tie
20	44809 (1000)	1	Cable, MKI/LED board
21	90030-08 (1000)	5	Screw
22	44732 (1000)	1	LED board assembly
23	45928 (1000)	2	Foam shield
24	4975710 (1000) or 4975713 (1000)	1 1	Casting key panel assembly, with scale, with ZoneAire Sleep Surface Casting key panel assembly, VIP, with scale, with ZoneAire Sleep Surface
25	90196-06 (1000)	8	Screw—hilow
26	39159 (1000)	1	Aluminum extrusion plate
27	38529 (1000)	1	Torsion spring
28	42694 (1000)	1	Door assembly complete
29	SA1555 (1000)	1	Door assembly (scale unit)

* Specify high pressure laminate color.

Item Number	Part Number	Quantity	Description
30	4975810 (1000) or 4975813 (1000)	1 1	Control panel assembly, scale, with ZoneAire Sleep Surface Control panel assembly, VIP, scale, with ZoneAire Sleep Surface
31	39161 (1000)	1	Pin
32	45661-03 (1000)	1	LED overlay, scale, with ZoneAire Sleep Surface
33	Not sold separately	—	Membrane overlay, scale, with ZoneAire Sleep Surface
34	Not sold separately	7	Screw
35	Not sold separately	32	Plunger
36	Not sold separately	1	Key panel, membrane switch
37	44810-02 (1000)	1	Cable, folded MFI/key panel
38	Not sold separately	1	Trendelenburg indicator housing
39	Not sold separately	2	Keps nut
40	Not sold separately	1	Window
41	38525 (1000)	1	Adhesive tape
42			
43	45670-20 (1000)	1	Cable, ground strap
44	45670-24 (1000)	1	Cable, ground strap
45	45665 (1000)	2	Ground clip
46	44537 (1000)	1	MPB box top assembly
47	19124 1000)	2	Large cable tie
48	40211 (1000)	1	Plastic fastener
49	39506-01 (1000)	1	Scale micro board assembly
50	40887 (1000)	1	MPB fiche paper
51	39638 (1000)	1	MPB box bottom
52	42797 (1000)	1	Scale instruction label
53	Not sold separately	1	Scale display assembly
54	Not sold separately	1	Mylar insulator
55	40286 (1000)	1	Scale test cable
56	44807 (1000)	1	Cable, assembly scale/footboard
57	40421 (1000)	2	Cable tie mount

NOTES:

Footboard with Scale—P4166B (P1165 “F” Version Bed)

Figure 5-31. Footboard with Scale—P4166B (P1165 “F” Version Bed)

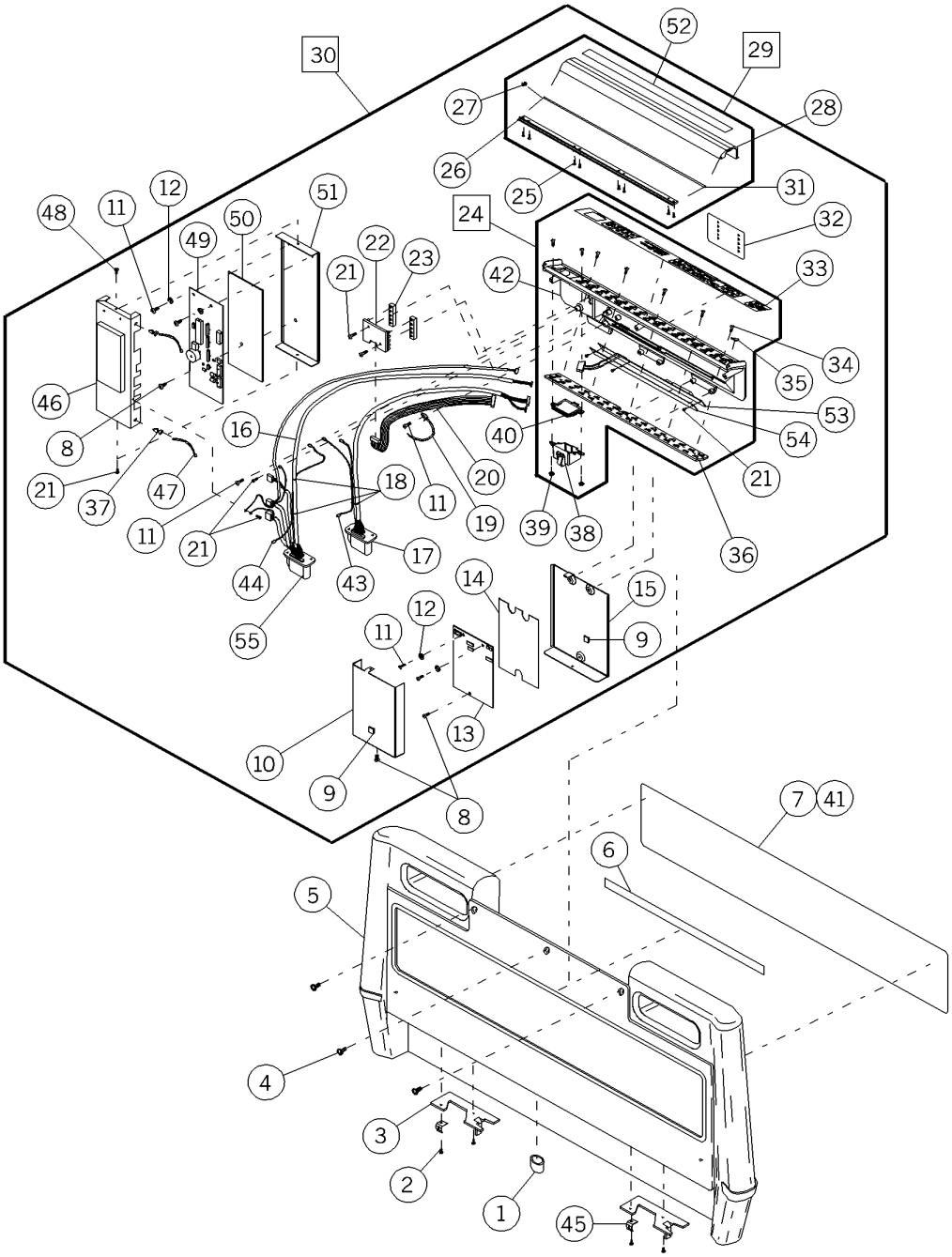

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Table 5-52. Footboard with Scale—P4166B (P1165 "F" Version Bed)

Item Number	Part Number	Quantity	Description
1	12951 (1000)	1	Grommet
2	90037-04 (1000)	4	Screw, thread cutting
3	43604 (1000)	2	Receptacle bracket
4	752 (1000)	3	Screw truss head
5	40294 (1000)	1	Footboard shell assembly
6	40310-01 (1000)	1	Caution label
7	38524 (1000)*	1	HPL insert
8	393 (1000)	2	Screw
9	45856 (1000)	2	Foam spacer
10	44734-PL (1000)	1	Interface, box top
11	13206 (1000)	5	Screw
12	15907 (1000)	4	Lockwasher
13	62738 (1000)	1	PCB assembly, membrane interface
14	44735 (1000)	1	Insulator
15	44733-PL (1000)	1	Interface, box bottom
16	44808-01 (1000)	1	Cable MKI/net scale
17	44806 (1000)	1	Cable, MFI/nurse control
18	14450 (1000)	3	Small cable tie
19	45708 (1000)	1	Wire tie
20	60108 (1000)	1	Cable, 14-conductor
21	90030-08 (1000)	5	Screw
22	44732 (1000)	1	LED board assembly
23	45928 (1000)	2	Foam shield
24	6274510 (1000) or 6274513 (1000)	1 1	Casting/key panel assembly, with scale, with ZoneAire Sleep Surface Casting/key panel assembly, VIP, with scale, with ZoneAire Sleep Surface
25	90196-06 (1000)	8	Screw—hilow
26	39159 (1000)	1	Aluminum extrusion plate
27	38529 (1000)	1	Torsion spring
28	42694 (1000)	1	Door assembly complete
29	SA1555 (1000)	1	Door assembly (scale unit)

* Specify high pressure laminate color.

Item Number	Part Number	Quantity	Description
30	6263113 (1000) or 6263115 (1000)	1 1	Control panel assembly, scale, with ZoneAire Sleep Surface Control panel assembly,VIP, scale, with ZoneAire Sleep Surface
31	39161 (1000)	1	Pin
32	45661-03 (1000)	1	LED overlay, scale, with ZoneAire Sleep Surface
33	Not sold separately	—	Membrane overlay, scale, with ZoneAire Sleep Surface
34	Not sold separately	7	Screw
35	Not sold separately	32	Plunger
36	Not sold separately	1	Key panel, membrane switch
37	62742 (1000)	1	15-position cable
38	49755 (1000)	1	Cable assembly, 12-conductor
39	Not sold separately	1	Trendelenburg indicator housing
40	Not sold separately	2	Keps nut
41	Not sold separately	1	Window
42	38525 (1000)	1	Adhesive tape
43			
44	45670-20 (1000)	1	Cable, ground strap
45	45670-24 (1000)	1	Cable, ground strap
46	45665 (1000)	2	Ground clip
47	44537 (1000)	1	MPB box top assembly
48	19124 1000)	2	Large cable tie
49	40211 (1000)	1	Plastic fastener
50	61205 (1000)	1	Scale micro board assembly
51	40887 (1000)	1	MPB fiche paper
52	39638 (1000)	1	MPB box bottom
53	42797 (1000)	1	Scale instruction label
54	Not sold separately	1	Scale display assembly
55	Not sold separately	1	Mylar insulator
56			
57	61597 (1000)	1	Cable, assembly scale/footboard
58	40421 (1000)	2	Cable tie mount

NOTES:

Foot Siderail Assembly

Figure 5-32. Foot Siderail Assembly

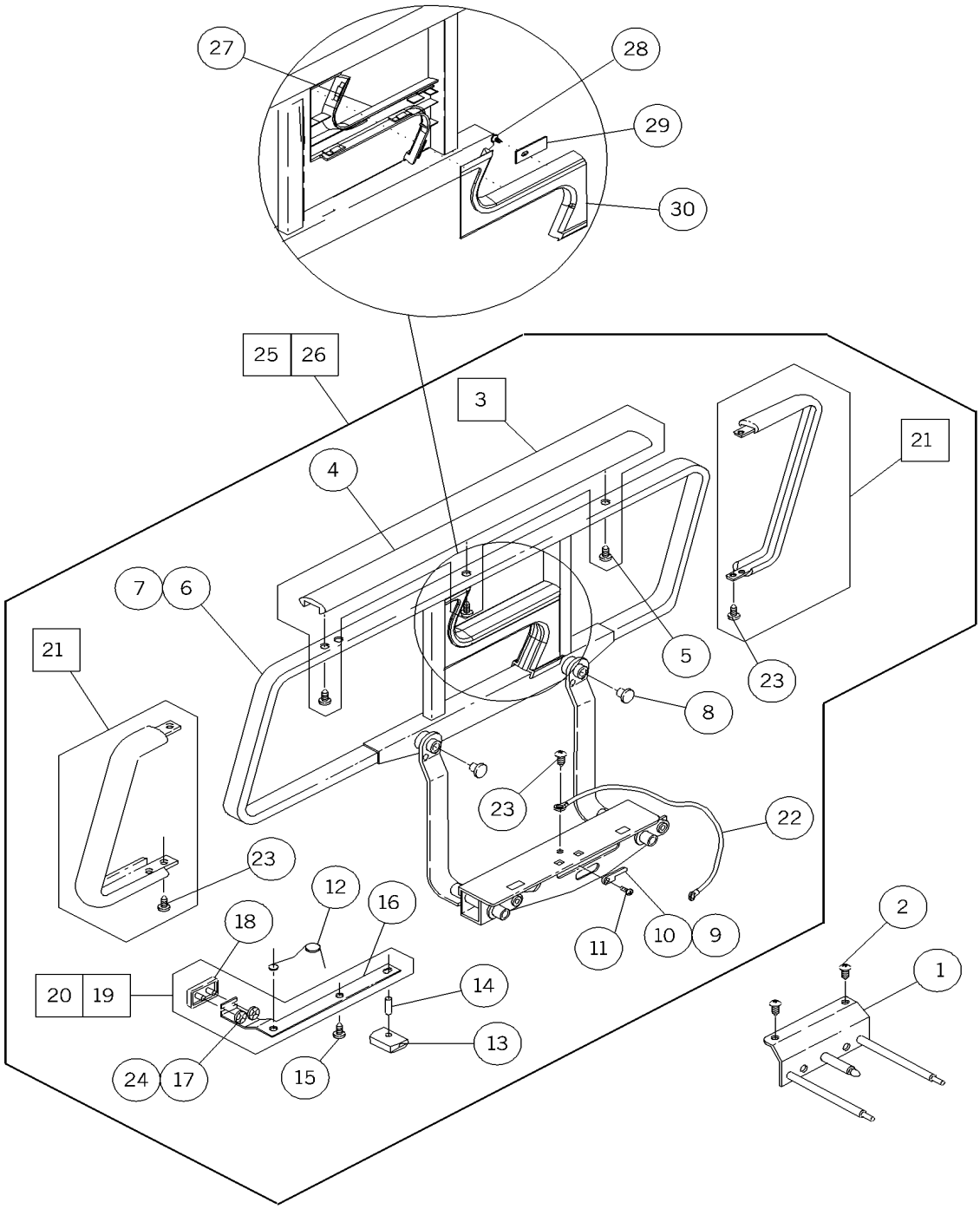

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Table 5-53. Foot Siderail Assembly

Item Number	Part Number	Quantity	Description
1	23485 (1000)	2	Slide bracket assembly
2	43880 (1000)	4	Torx pan head screw
3	SA1382 (1000)	2	Top cane—foot
4	38569 (1000)	2	Top cane foot
5	90188-08 (1000)	6	Hilow thread forming screw
6	38815 (1000)	1	Siderail frame assembly—rh
7	38660 (1000)	1	Siderail frame assembly—lh, pc
8	29457-48 (1000)	4	Hole plug
9	39713 (1000)	1	Key latch (lh)
10	39714 (1000)	1	Key latch (rh)
11	35072 (1000)	2	Shoulder screw
12	35261 (1000)	2	Spring
13	26078 (1000)	2	Latch block
14	44328 (1000)	2	Spiral pin
15	37387 (1000)	2	Shoulder screw
16	39412 (1000)	2	Release arm
17	17291 (1000)	4	Pushnut
18	19562 (1000)	2	Latch cover
19	39414 (1000)	1	Release arm assembly—rh
20	39415 (1000)	1	Release arm assembly—lh
21	SA1383 (1000)	4	End cane and screw
22	28629 (1000)	2	Ground strap assembly
23	90037-02 (1000)	6	Screw
24	SA4841 (1000)	As required	Red Loctite
25	38697 (1000)	1	Siderail assembly—rh
26	38698 (1000)	1	Siderail assembly—lh
27	48890-48 (1000)*	2	Siderail insert—male
28	90188-08 (1000)	2	Hilow thread forming screw
29	49223 (1000)	2	Locking plate
30	48891-48 (1000)*	2	Siderail insert—female

*Not sold separately

Head Siderail Assembly—“A”, “B”, and “C” Version Beds

Figure 5-33. Head Siderail Assembly—“A”, “B”, and “C” Version Beds

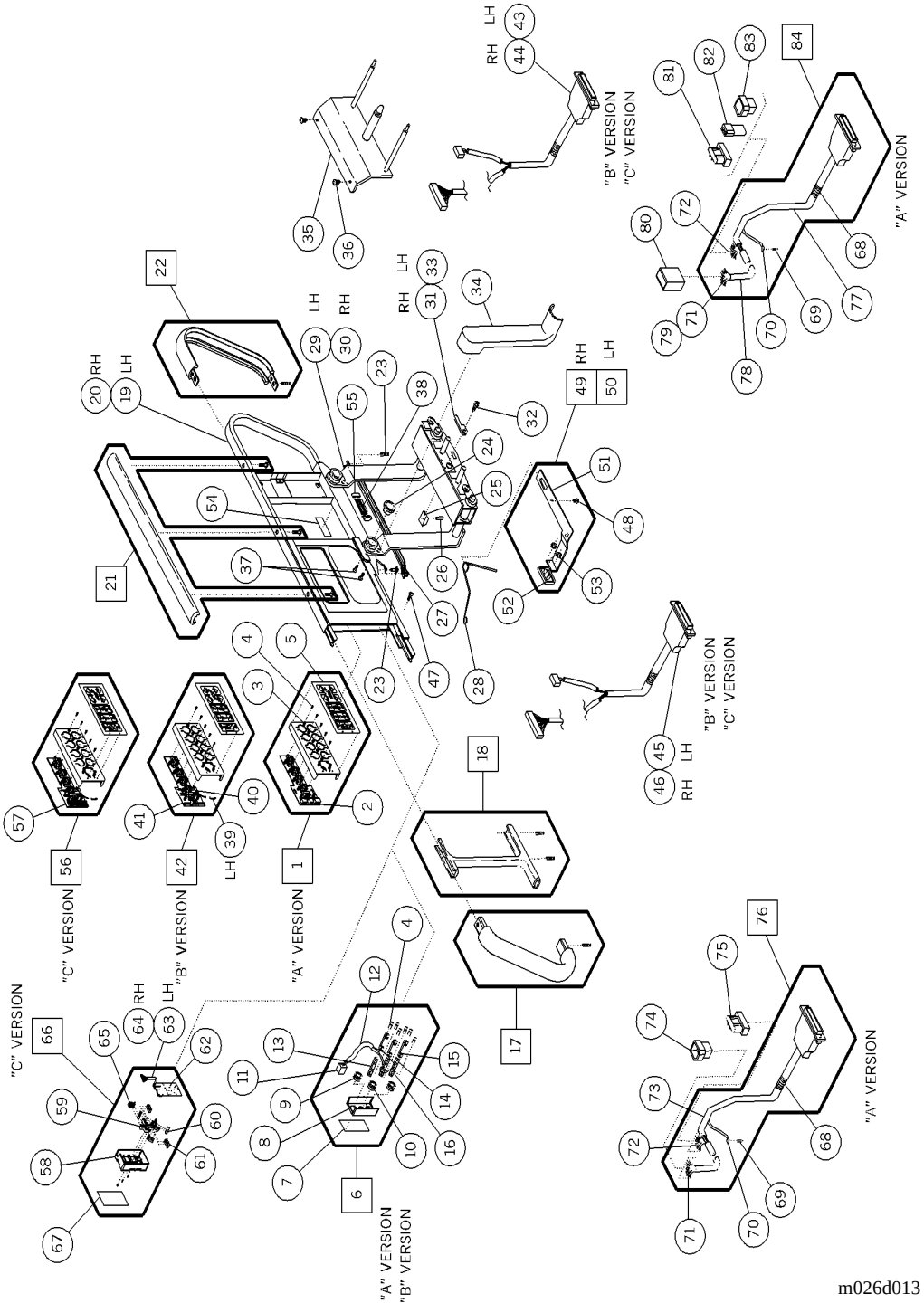

Table 5-54. Head Siderail Assembly— "A", "B", and "C" Version Beds

Item Number	Part Number	Quantity	Description
1	See table 5-124 on page 5-250 and table 5-125 on page 5-251.		Patient control assembly—see "Patient Control Unit and Communication Module" ("A" version beds only)
2	See table 5-124 on page 5-250 and table 5-125 on page 5-251.		Patient control assembly—see "Patient Control Unit and Communication Module" ("A" version beds only)
3	38335 (1000)	2	Patient control panel
4	34683 (1000)	16	Screw
5	See table 5-124 on page 5-250, table 5-125 on page 5-251, table 5-126 on page 5-252, and table 5-127 on page 5-253.		Patient control overlay—see "Patient Control Unit and Communication Module" ("A" and "B" version beds only)
6	See table 5-132 on page 5-258.		Nurse control assembly complete—see "Siderail Control Switch Units" ("A" and "B" version beds only)
7	See table 5-132 on page 5-258.		Nurse control overlay—see "Siderail Control Switch Units" ("A" and "B" version beds only)
8	See table 5-132 on page 5-258.		Outer control panel—see "Siderail Control Switch Units" ("A" and "B" version beds only)
9	38332 (1000)	2	Button—large
10	38331 (1000)	4	Button—small
11	30972-08 (1000)	2	Plug—8 position
12	See table 5-133 on page 5-259.		Nurse switch and cable assembly—see "Siderail Control Switch Units" ("C" version beds only)
13	SA1593 (1000)	0 or 2	Switch with shrink tubing
14	43386 (1000)	4	Auto contour switch
15	38329 (1000)	4 or 6	Switch retainer
16	38334 (1000)	4 or 6	Switch holder
17	SA1385 (1000)	2	Siderail ext. end cane and screws
18	SA1384 (1000)	2	Control housing cover and screws
19	38337 (1000)	1	Siderail control housing—EMOAS4, rh

Item Number	Part Number	Quantity	Description
20	38338 (1000)	1	Siderail control housing—EMOAS4, lh
21	SA1387 (1000)	2	Top cane and screws—head siderail
22	SA1383 (1000)	2	End cane and screw
23	90037-02 (1000)	6	Screw
24	28717 (1000)	4	Bushing
25	26078 (1000)	2	Latch block
26	44328 (1000)	2	Spiral pin
27	28816 (1000)	2	Bottom cover
28	35261 (1000)	2	Spring
29	38664 (1000)	1	Communication siderail frame assembly—lh
30	38657 (1000)	1	Communication siderail frame assembly—rh, pc
31	39714 (1000)	1	Key latch (rh)
32	35072 (1000)	2	Shoulder screw
33	39713 (1000)	1	Key latch (lh)
34	19833-48 (1000)	4	Wire cover
35	23485 (1000)	2	Slide bracket assembly
36	43880 (1000)	4	Torx pan head screw
37	90166-01 (1000)	8	Screw
38	44578 (1000)	2	Interface board
39	44590 (1000)	1	2 conductor nurse call cable
40	14450 (1000)	1	Small cable tie
41	See table 5-132 on page 5-258.		Switchboard assembly—see "Siderail Control Switch Units" ("B" version beds only)
42	See table 5-132 on page 5-258.		Patient control assembly—see "Siderail Control Switch Units" ("B" version bed only)
43	44554-01 (1000)	1	15 conductor function cable—lh
44	44554-02 (1000)	1	15 conductor function cable—rh
45	44555-01 (1000)	1	25 conductor communication cable—lh
46	44555-02 (1000)	1	25 conductor communication cable—rh
47	90327-06 (1000)	2	Screw
48	37387 (1000)	2	Shoulder screw
49	39414 (1000)	1	Release arm assembly—rh
50	39415 (1000)	1	Release arm assembly—lh
51	39412 (1000)	2	Release arm

Item Number	Part Number	Quantity	Description
52	19562 (1000)	2	Latch cover
53	17291 (1000)	4	Pushnut
54	41696-01 (1000)	1	Warning/caution label
55	90002-06 (1000)	2	Tubing blank
56	See table 5-133 on page 5-259.		Patient control assembly—see "Siderail Control Switch Units" ("C" version beds only)
57	See table 5-133 on page 5-259		Switchboard assembly—see "Siderail Control Switch Units" ("C" version beds only)
58	44769 (1000)	2	Switch housing
59	44770 (1000)	2	Switch tree
60	30816-01 (1000)	8	Switch
61	44771 (1000)	4	Switch blank
62	44667 (1000)	2	Switch PCB
63	44553-01 (1000)	1	Cable assembly
64	44553-02 (1000)	1	Cable assembly
65	30817 (1000)	2	Switch (nurse call only)
66	See table 5-133 on page 5-259		Nurse control assembly complete—see "Siderail Control Switch Units" ("C" version beds only)
67	See table 5-133 on page 5-259		Nurse control overlay—see "Siderail Control Switch Units" ("C" version beds only)
68	31544 (1000)	4	Spring
69			
70	28867 (1000)	2	Ground strap assembly
71	30979 (1000)	42	Terminal receptacle
72	43930 (1000)	30	Male pin
73	44184 (1000)	2	15 conductor cable
74	30972-12 (1000)	2	Dual row housing—12 position
75	30931 (1000)	2	Plug housing—3 circuit
76	44186-01 (1000)	2	15 conductor cable assembly
77	44183 (1000)	2	22 conductor cable
78	90002-01 (1000)	2	Tubing blank
79	22153 (1000)	4	Male pin
80	30972-10 (1000)	2	Dual row housing—10 position
81	28492 (1000)	2	Plug—4 position

Item Number	Part Number	Quantity	Description
82	28519 (1000)	2	Plug—9 position
83	29815 (1000)	2	Plug—2 position
84	44187-01 (1000)	2	22 conductor cable assembly
85	90196-06 (1000)	3	Screw—hilow
86	44825-48 (1000)	1	Siderail control housing—lh, pc
87	44824-48 (1000)	1	Siderail control housing—rh

NOTES:

Head Siderail Assembly—“E” and “F” Version Beds

Figure 5-34. Head Siderail Assembly—“E” and “F” Version Beds

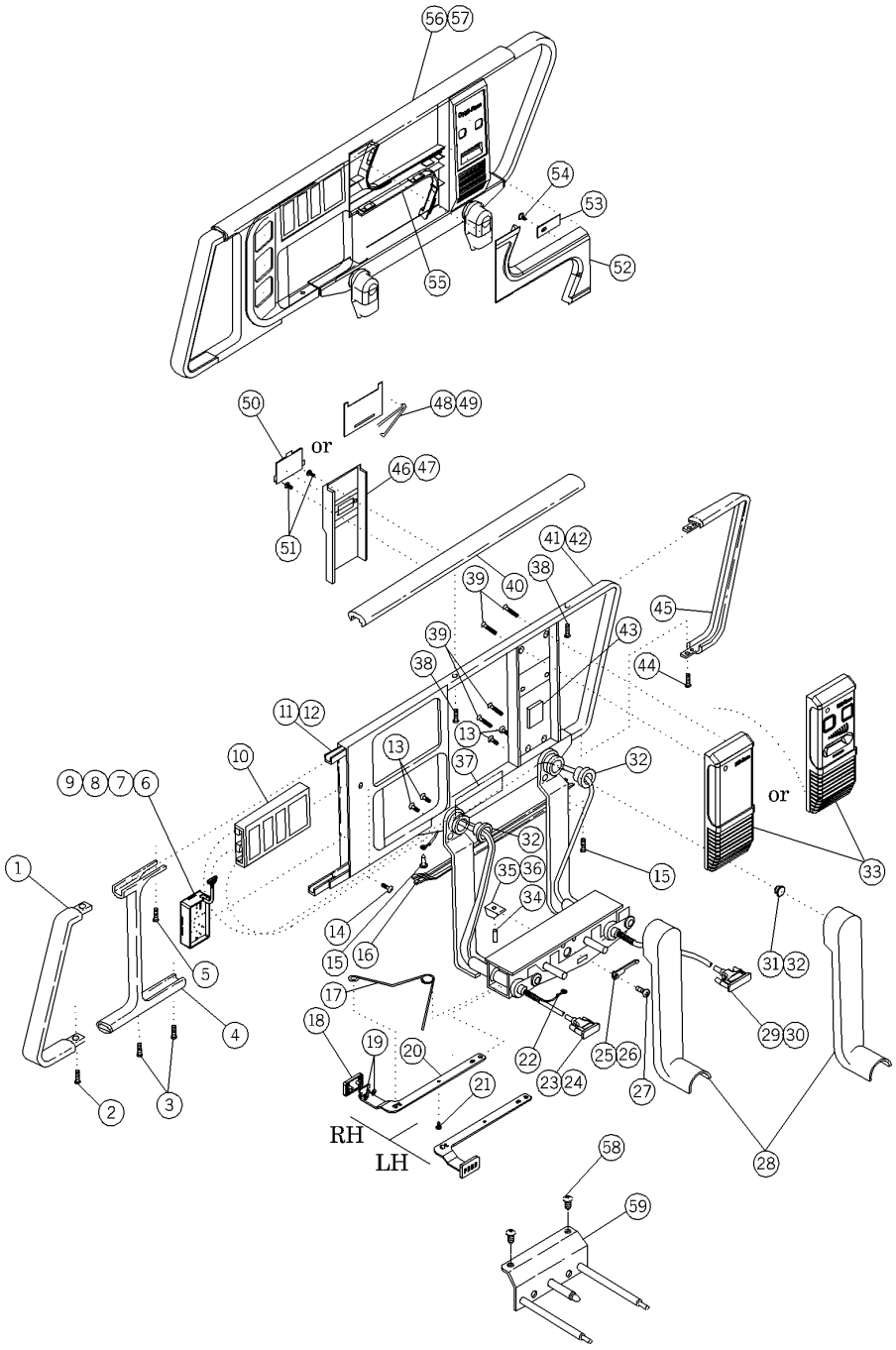

Table 5-55. Head Siderail Assembly—"E" and "F" Version Beds

Item Number	Part Number	Quantity	Description
1	38568 (1000)	1	Siderail extension rail
2	34606 (1000)	1	Screw
3	4403 (1000)	2	Screw
4	44826-48 (1000)	1	Control housing cover
5	42683 (1000)	1	Hilow screw
6	44668-03 (1000)	1	Outer control panel assembly (lh)
7	44668-04 (1000)	1	Outer control panel assembly (rh)
8	44668-05 (1000)	1	Outer control panel assembly (option 59, lh)
9	44668-06 (1000)	1	Outer control panel assembly (option 59, rh)
10	See table 5-130 on page 5-256 and table 5-131 on page 5-257.	1	Patient control assembly—see "Patient Control Unit and Communication Module" ("E" and "F" version beds only)
11	44825-48 (1000)	1	Siderail control housing—lh
12	44824-48 (1000)	1	Siderail control housing—rh
13	90166-01 (1000)	4	Screw
14	90327-06 (1000)	1	Screw
15	90037-02 (1000)	2	Screw
16	28816 (1000)	1	Bottom cover
17	35261 (1000)	1	Spring
18	19562 (1000)	1	Latch cover
19	17291 (1000)	2	Push nut
20	39412 (1000)	1	Release arm
21	37387 (1000)	1	Shoulder screw
22	28867 (1000)	1	Ground strap assembly
23	44554-01 (1000)	1	15 conductor function cable—lh
24	44554-02 (1000)	1	15 conductor function cable—rh
25	39713 (1000)	1	Key latch (lh)
26	39714 (1000)	1	Key latch (rh)
27	35072 (1000)	1	Shoulder screw
28	19833-48 (1000)	2	Wire cover
29	44555-01 (1000)	1	25 conductor communication cable—lh
30	44555-02 (1000)	1	25 conductor communication cable—rh
31	29457-48 (1000)	1	Hole plug (siderail option 59 only)

Item Number	Part Number	Quantity	Description
32	28717 (1000)	2	Bushing
33	See table 5-130 on page 5-256 and table 5-131 on page 5-257.	1	Communication housing assembly—see "Patient Control Unit and Communication Module" ("E" and "F" version beds only)
34	44328 (1000)	1	Spiral pin
35	26078 (1000)	1	Latch block
36	SA3351 (1000)	As required	Lithium grease
37	41696-01 (1000)	1	Warning/caution label
38	90188-08 (1000)	2	Hilow thread forming screw
39	34684 (1000)	4	Screw
40	38567 (1000)	1	Top cane head
41	38664 (1000)	1	Communication siderail frame assembly—lh
42	38657 (1000)	1	Communication siderail frame assembly—rh
43	28579 (1000)	0.0833 lft.	Tape
44	4759 (1000)	1	Screw
45	38566 (1000)	1	End cane
46	446060148 (1000)	1	Communication housing back
47	44465-01-48 (1000)	1	Left-hand communication housing back (bed exit models only)
48	34409 (1000)	1	Spring (bed exit models only)
49	25329 (1000)	As required	Adhesive—1 oz. bottle (bed exit only)
50	34408-48 (1000)	1	Cover plate (rh siderail only)
51	34457 (1000)	2	Screw
52	48891-48 (1000)*	2	Siderail insert—female
53	49223 (1000)	2	Locking plate
54	90188-08 (1000)	2	Hilow thread forming screw
55	48890-48 (1000)*	2	Siderail insert—male
56	See table 5-123 on page 5-250.	1	Siderail assembly complete—lh
57	See table 5-123 on page 5-250.	1	Siderail assembly complete—rh

*Not sold separately

NOTES:

Communication Housing Assembly—“A”, “B”, and “C” Version Beds

Figure 5-35. Communication Housing Assembly—“A”, “B”, and “C” Version Beds

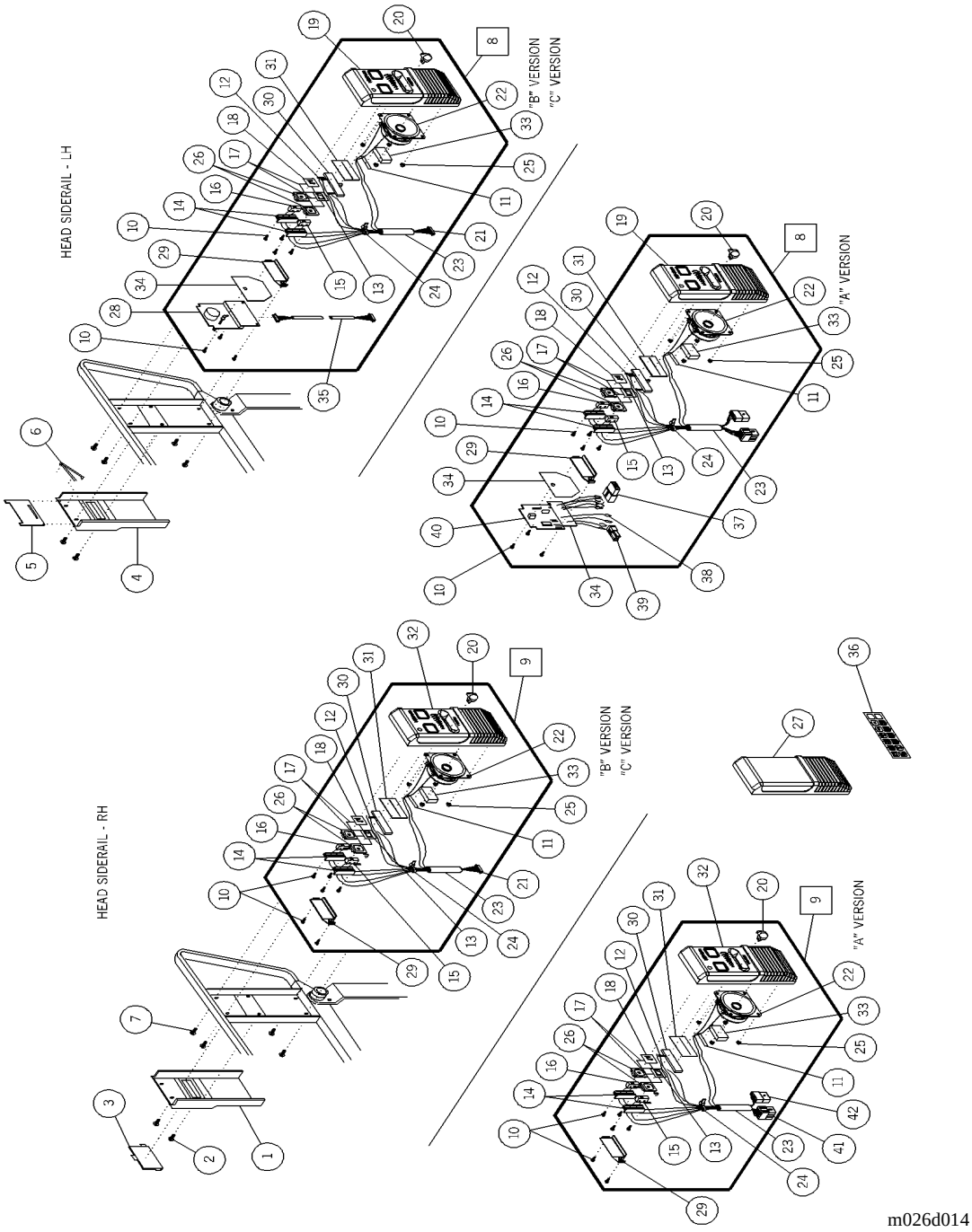

Table 5-56. Communication Housing Assembly—"A", "B", and "C" Version Beds

Item Number	Part Number	Quantity	Description
1	SA1386 (1000)	1 or 2	Communication housing back and label
2	34457 (1000)	4	Screw
3	34408-48 (1000)	1 or 2	Cover plate
4	SA1388 (1000)	0 or 1	Communication housing back and label—bed exit
5	38513 (1000)	0 or 1	Sliding door
6	34409 (1000)	0 or 1	Spring
7	34684 (1000)	8	Screw
8	See table 5-128 on page 5-254 and table 5-129 on page 5-255.		Communication housing assembly—lh
9	See table 5-128 on page 5-254 and table 5-129 on page 5-255.		Communication housing assembly—rh
10	28623 (1000)	11	Screw
11	40776 (1000)	2	Label
12	35171 (1000)	6	Shrink tubing
13	38771 (1000)	2	Communication label—TV switch
14	28752 (1000)	4	Switch mount
15	33344 (1000)	2	Switch—TV
16	31767 (1000)	2	Nurse call switch
17	38773 (1000)	4	Communication label—underlay
18	38772 (1000)	2	Communication label—radio switch
19	42945-01 (1000)	1	Bed exit communication housing front
20	42684 (1000)	2	Volume knob
21	44552 (1000)	2	9 conductor entertainment housing cable
22	28550 (1000)	2	Speaker
23	42078 (1000)	2	Communication housing tubing
24	14450 (1000)	2	Small cable tie
25	28562 (1000)	8	Palnut
26	38607 (1000)	4	Switch back

Item Number	Part Number	Quantity	Description
27	34454-48 (1000)	1	Communication housing blank
28	44482-01 (1000)	1	Bed exit P.C. board
29	38666 (1000)	2	Volume bracket
30	35290 (1000)	2	Volume control
31	42214 (1000)	2	Volume gasket
32	42945-02 (1000)	1	Communication housing front
33	38260 (1000)	2	Foam tape
34	34991 (1000)	1	Insulator
35	44551 (1000)	1	8 conductor bed exit cable
36	44411 (1000)	2	Label assortment Advance
37	30926 (1000)	1	Receptacle housing
38	22154 (1000)	13	Female pin
39	30927 (1000)	1	Receptacle housing
40	44482-01 (1000)	1	Bed exit P.C. board
41	28518 (1000)	2	Receptacle—9 position
42	28491 (1000)	2	Receptacle—4 position
43	44477 (1000)	1	Cable assembly

NOTES:

Communication Housing Assembly—P/N 61634-01/02 (“E” and “F” Version Beds)

Figure 5-36. Communication Housing Assembly—P/N 61634-01/02 (“E” and “F” Version Beds)

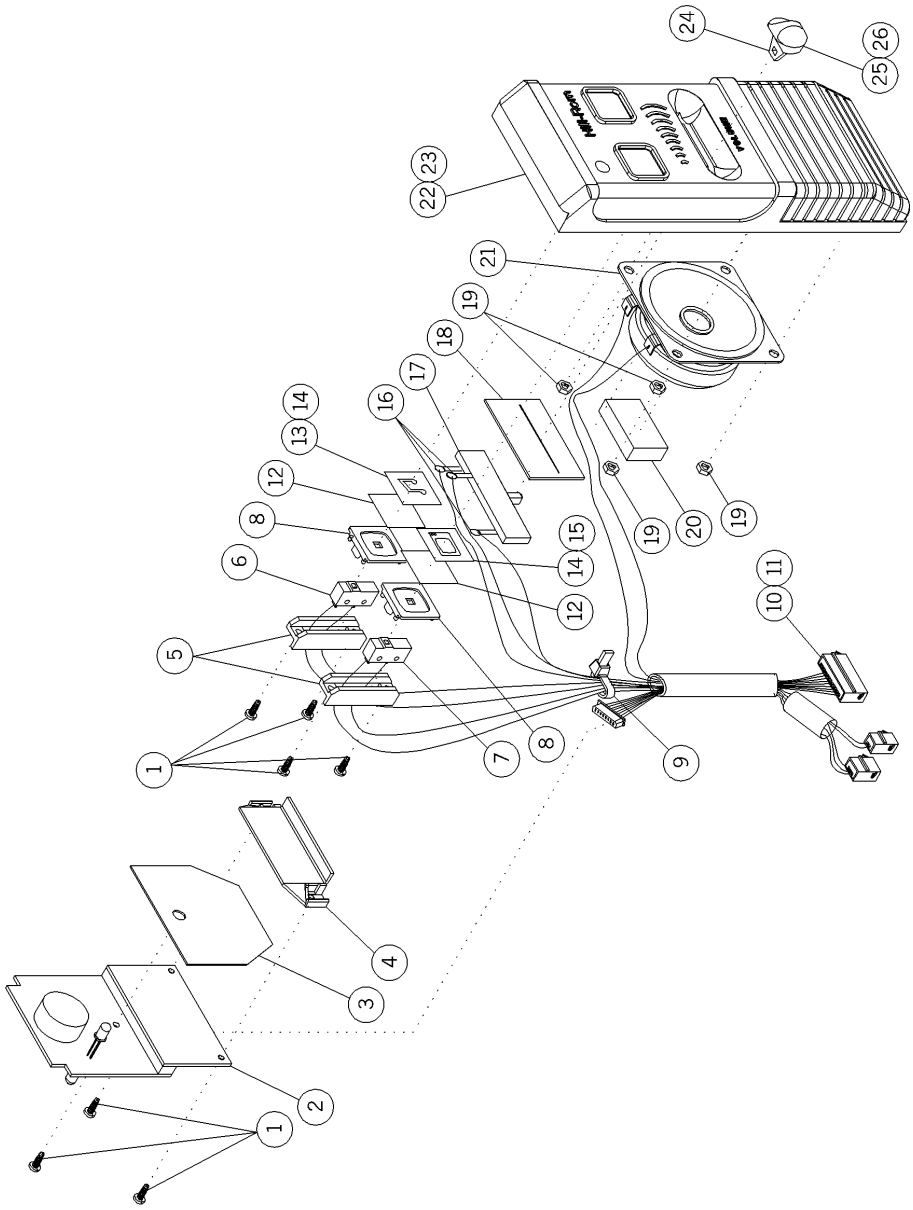

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Table 5-57. Communication Housing Assembly—P/N 61634-01/02 (“E” and “F” Version Beds)

Item Number	Part Number	Quantity	Description
1	28623 (1000)	7	Screw
2	44482-01 (1000)	1	Bed exit power control board (lh assembly only)
3	34991 (1000)	1	Insulator
4	38666 (1000)	1	Volume bracket
5	28752 (1000)	2	Switch mount
6	31767 (1000)	1	Nurse call switch
7	33344 (1000)	1	Switch—TV
8	38607 (1000)	2	Switch back
9	14450 (1000)	1	Small cable tie
10	6161701 (1000)	1	Cable assembly, siderail interface lh
11	6161601 (1000)	1	Cable assembly, siderail interface rh
12	38773 (1000)	2	Communication label—underlay
13	38772 (1000)	1	Communication label—radio switch
14	91v132 (1000)	2	Blank communication siderail label
15	38771 (1000)	1	Communication label—TV switch
16	35171 (1000)	3	Shrink tubing
17	35290 (1000)	1	Volume control
18	42214 (1000)	1	Volume gasket
19	28562 (1000)	4	Palnut
20	38260 (1000)	1	Foam tape
21	28550 (1000)	1	Speaker
22	42945-01 (1000)	1	Bed exit communication housing front (lh)
23	42945-02 (1000)	1	Communication housing front (rh)
24	38666 (1000)	1	Volume bracket
25	42684 (1000)	1	Volume knob
26	91v053 (1000)	1	Volume knob cover

Knee Drive Assembly—P/N 43140 and 61701

Figure 5-37. Knee Drive Assembly—P/N 43140 and 61701

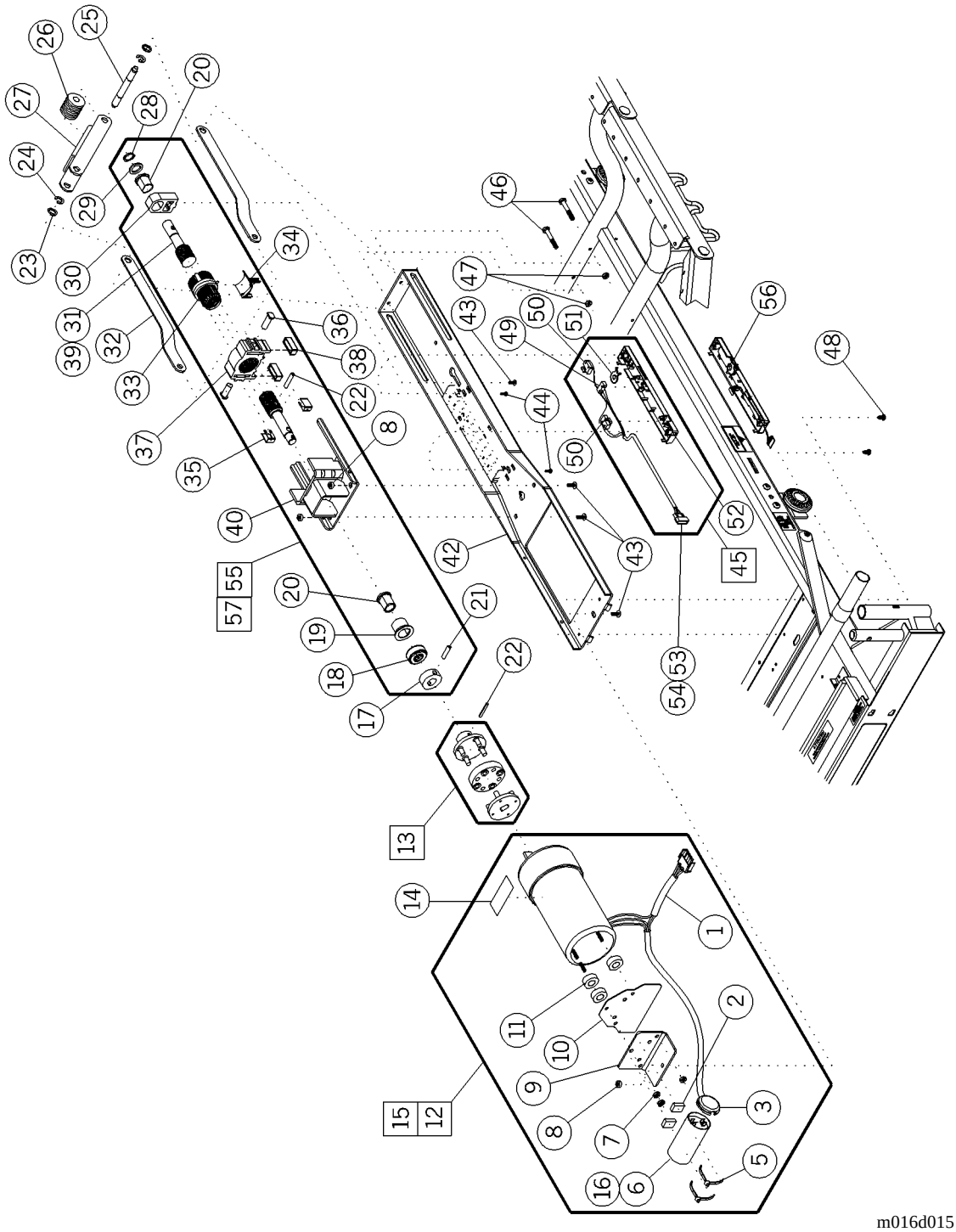

Table 5-58. Knee Drive Assembly—P/N 43140 and 61701

Item Number	Part Number	Quantity	Description
1	43288 (1000)	1	Cable harness (knee)
2	38260 (1000)	2	Foam tape
3	40523 (1000)	1	Cap
4			
5	19124 (1000)	2	Large cable tie
6	40434 (1000)	1	Capacitor (115 volt models)
7	40497 (1000)	3	Keps nut
8	43276 (1000)	3	Clinch nut
9	43107 (1000)	1	Rear motor bracket
10	43976 (1000)	1	Barrier—plastic
11	40480 (1000)	3	Isolation mount
12	35000S (1000)	1	Universal motor assembly (115 volt models)
13	36250 (1000)	1	Coupling assembly
14	34812 (1000)	1	Caution label
15	40459-01 (1000)	1	Knee motor (230 volt models)
16	30143 (1000)	1	Capacitor (230 volt models)
17	42844 (1000)	1	Fixed end
18	43875 (1000)	1	Ball thrust bearing
19	42842 (1000)	1	Bearing end
20	42847 (1000)	2	Radial thrust bearing
21	44380 (1000)	1	Groove pin
22	3517 (1000)	2 or 1	Spring pin (“A”, “B”, “C” version bed) Spring pin (“E”, “F” version bed)
23	9525 (1000)	2	Washer
24	35326 (1000)	2	E-ring
25	43322 (1000)	1	Axle
26	43108 (1000)	1	Roller
27	43110 (1000)	1	C-link
28	43133 (1000)	1	Retaining ring
29	43132 (1000)	1	Washer
30	42846 (1000)	1	Radial bracket
31	43273 (1000)	1	Hilow/knee drive screw
32	43109 (1000)	2	Link

Item Number	Part Number	Quantity	Description
33	42845 (1000)	1	Lift nut
34	43702 (1000) or 61991 (1000)	1 1	Switch slide (“A”, “B”, “C” version bed) Switch slide assembly (“E”, “F” version bed)
35	43275 (1000)	2	Spring clip
36	42946 (1000)	2	Torque cage pin
37	42848 (1000)	1	Torque cage
38	43336 (1000)	2	Guide
39	SA3351 (1000)	As required	4 ounce lithium grease
40	43887-48 (1000)	1	Thrust bracket assembly
41			
42	43112 (1000)	1	Knee channel
43	43880 (1000)	4	Torx pan head screw
44	43389 (1000) or 61997 (1000)	2 2	Hilow torx screw (“A”, “B”, “C” version bed) Screw, hilow, pan, torx (“E”, “F” version bed)
45	43383 (1000)	1	Knee switch housing assembly (“A”, “B”, “C” version bed)
46	90018-28 (1000)	2	Hex head cap screw
47	20802 (1000)	2	Keps nut
48	43878 (1000)	2	Torx button head screw
49	43386 (1000)	1	Auto contour switch (“A”, “B”, “C” version bed)
50	42878 (1000)	2	Extended limit switch (“A”, “B”, “C” version bed)
51	43387 (1000)	1	Auto contour cam (“A”,“B”,“C” version bed)
52	42877 (1000)	1	Knee switch housing (“A”, “B”, “C” version bed)
53	30949 (1000)	1	Plug housing
54	43930 (1000)	5	Male pin
55	43273S1 (1000)	1	Knee drive screw assembly (“A”, “B”, “C” version bed)
56	63176 (1000)	1	Knee drive limit assembly (“E”, “F” version bed)
57	SA1662 (1000)	1	Knee drive screw assembly (“E”, “F” verson bed)

NOTES:

Head Drive Unit Assembly—P/N 43353, 6200401and 6200402

Figure 5-38. Head Drive Unit Assembly—P/N 43353, 6200401 and 6200402

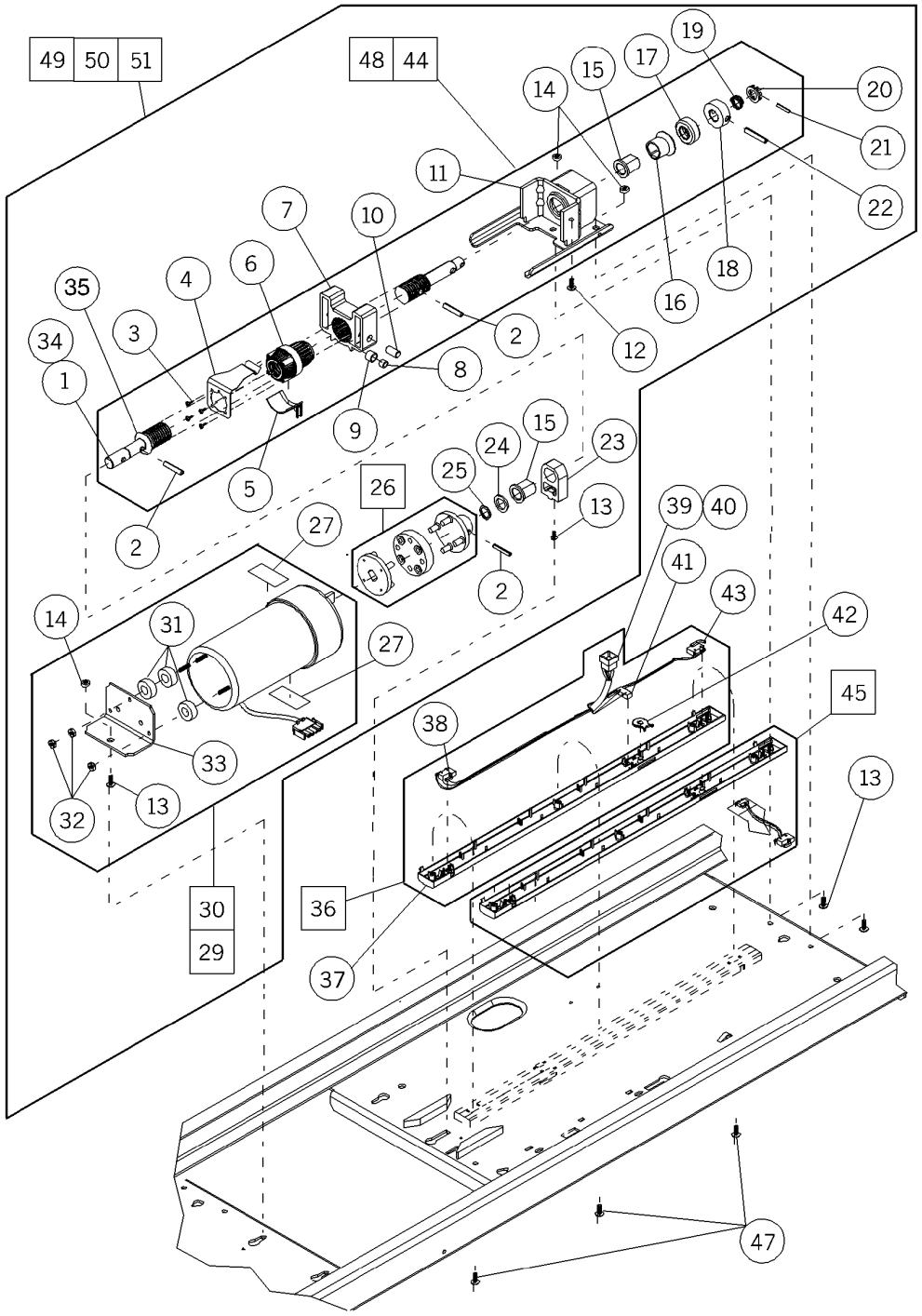

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Table 5-59. Head Drive Unit Assembly—P/N 43353, 6200401 and 6200402

Item Number	Part Number	Quantity	Description
1	43272s (1000)	1	Head drive screw assembly
2	3517 (1000)	3 or 2	Spring pin (“A”, “B”, “C” version bed) Spring pin (“E”, “F” version bed)
3	42141 (1000)	4	Hilow screw
4	43359 (1000)	1	Clip engagement
5	43702 (1000) or 61991 (1000)	1 1	Switch slide (“A”, “B”, “C” version bed) Switch slide assembly (“E”, “F” version bed)
6	42845 (1000)	1	Lift nut
7	43274 (1000)	1	Head torque cage
8	43279 (1000)	2	Needle bearing
9	43675 (1000)	2	Sleeve
10	43672 (1000)	2	Torque cage pin—head
11	43887-48 (1000)	1	Thrust bracket assembly
12	43878 (1000)	1	Torx button head screw
13	43880 (1000)	4	Torx pan head screw
14	43276 (1000)	3	Clinch nut
15	42847 (1000)	2	Radial thrust bearing
16	42842 (1000)	1	Bearing end
17	43875 (1000)	1	Ball thrust bearing
18	42844 (1000)	1	Fixed end
19	34951 (1000)	1	Spring
20	34864 (1000)	1	Washer
21	19636 (1000)	1	Slotted spring pin
22	44380 (1000)	1	Groove pin
23	42846 (1000)	1	Radial bracket
24	43132 (1000)	1	Washer
25	43133 (1000)	1	Retaining ring
26	36250 (1000)	1	Coupling assembly
27	34812	2	Caution label
28			
29	44530 (1000)	1	Head motor—230 volt
30	43370 (1000)	1	Head motor—115 volt

Item Number	Part Number	Quantity	Description
31	40480 (1000)	3	Isolation mount
32	40497 (1000)	3	Keps nut
33	43107 (1000)	1	Rear motor bracket
34	SA3351 (1000)	As required	4 ounce lithium grease
35	61996 (1000)	1	Steel washer (“E” and “F” version beds only)
36	43381 (1000)	1	Head switch housing assembly (“A”, “B”, “C” version bed)
37	42875 (1000)	1	Head switch housing (“A”, “B”, “C” version bed)
38	42878 (1000)	1	Extended limit switch (“A”, “B”, “C” version bed)
39	28519 (1000)	1	Plug—9 position (“A”, “B”, “C” version bed)
40	43930 (1000)	6	Male pin (“A”, “B”, “C” version bed)
41	43386 (1000)	1	Auto contour switch (“A”, “B”, “C” version bed)
42	43387 (1000)	1	Auto contour cam (“A”, “B”, “C” version bed)
43	43385 (1000)	1	Scale switch (“A”, “B”, “C” version bed)
44	43272S (1000)	1	Head drive screw assembly (“A”, “B”, “C” version bed)
45	63175 (1000)	1	Head drive limit assembly (“E”, “F” version bed)
46	61996 (1000)	1	Washer, flat (“E”, “F” version bed)
47	43389 (1000) or 61997 (1000)	3	Hilow torx screw (“A”, “B”, “C” version bed) Screw, hilow, pan, torx (“E”, “F” version bed)
48	SA1663 (1000)	1	Head drive screw assembly (“E”, “F” version bed)
49	43353 (1000)	1	Head drive screw assembly (with motor)
50	6200401 (1000)	1	Head drive screw assembly (without CPR)
51	6200402 (1000)	1	Head drive screw assembly (with CPR)

NOTES:

Head Hilow Drive Assembly—P/N 43278-01 and 6200301

Figure 5-39. Head Hilow Drive Assembly—P/N 43278-01 and 6200301

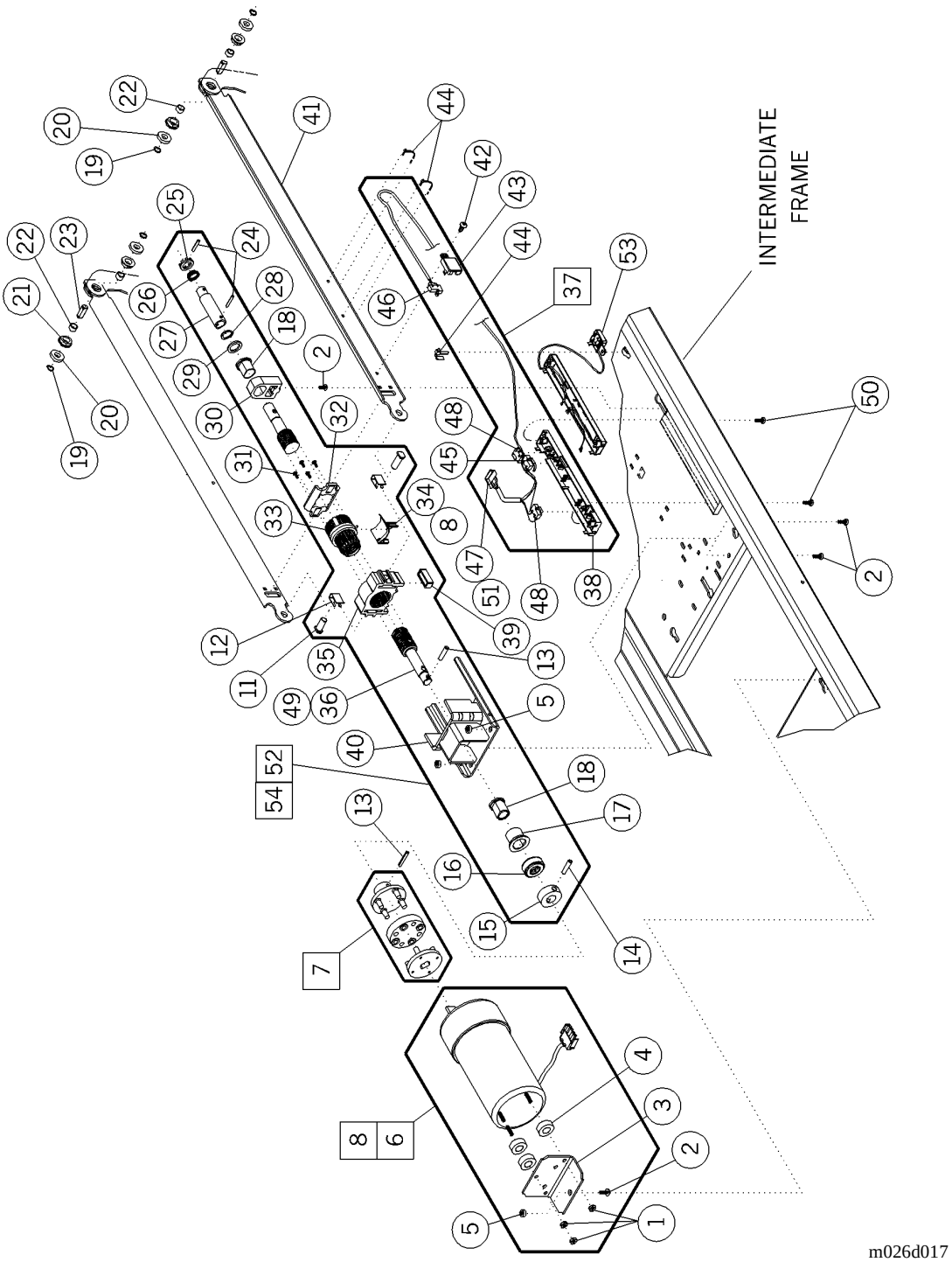

Table 5-60. Head Hilow Drive Assembly—P/N 43278-01 and 6200301

Item Number	Part Number	Quantity	Description
1	40497 (1000)	3	Keps nut
2	43880 (1000)	4	Torx pan head screw
3	43107 (1000)	1	Rear motor bracket
4	40480 (1000)	3	Isolation mount
5	43276 (1000)	3	Clinch nut
6	43369 (1000)	1	Hilow motor—115 volt
7	36250 (1000)	1	Coupling assembly
8	44529 (1000)	1	Hilow motor—230 volt
9			
10			
11	42946 (1000)	2	Torque cage pin
12	43275 (1000)	2	Spring clip
13	3517 (1000)	2 or 1	Spring pin (“A”, “B”, “C” version bed) Spring pin (“E”, “F” version bed)
14	44380 (1000)	1	Groove pin
15	42844 (1000)	1	Fixed end
16	43875 (1000)	1	Ball thrust bearing
17	42842 (1000)	1	Bearing end
18	42847 (1000)	2	Radial thrust bearing
19	12220 (1000)	4	Tru-arc ring
20	4540 (1000)	4	Washer
21	44265S (1000)	4	Bushing—double “D”
22	90263-04 (1000)	4	DU bushing
23	SA1592 (1000)	2	Single “D” shoulder bolt replacement
24	19636 (1000)	2	Slotted spring pin
25	34864 (1000)	1	Washer
26	34951 (1000)	1	Spring
27	44168 (1000)	1	Screw extension
28	43133 (1000)	1	Retaining ring
29	43132 (1000)	1	Washer
30	42846 (1000)	1	Radial bracket
31	42141 (1000)	4	Hilow screw
32	43334 (1000)	1	Hilow low limit

Item Number	Part Number	Quantity	Description
33	42845 (1000)	1	Lift nut
34	43702 (1000) or 61991 (1000)	1 1	Switch slide (“A”, “B”, “C” version bed) Switch slide assembly (“E”, “F” version bed)
35	42848 (1000)	1	Torque cage
36	43273 (1000)	1	Hilow/knee drive screw
37	45750 (1000)	1	Hilow head switch housing assembly (“A”, “B”, “C” version bed)
38	45747 (1000)	1	Hilow switch housing (“A”, “B”, “C” version bed)
39	43336 (1000)	2	Guide
40	43887-48 (1000)	1	Thrust bracket assembly
41	45749 (1000)	2	Hilow strap
42	43878 (1000)	1	Torx button head screw
43	48832(1000)	1	Head hilow low limit housing (“A”, “B”, “C” version bed)
44	19124 (1000)	3	Large cable tie
45	43385 (1000)	1	Scale switch
46	43384 (1000)	1	Limit switch (“A”, “B”, “C” version bed)
47	30949 (1000)	1	Plug housing
48	42878 (1000)	2	Extended limit switch
49	SA3351 (1000)	As required	Lithium grease
50	43389 (1000) or 61997 (1000)	2 2	Hilow torx screw (“A”, “B”, “C” version bed) Screw, Hilow, pan, torx (“E”, “F” version bed)
51	43930 (1000)	5	Male pin (“A”, “B”, “C” version bed)
52	43273S2 (1000)	1	Head hilow drive screw assembly (“A”, “B”, “C” version bed)
53	61490 (1000)	1	Hilow head limit assembly (“E”, “F” version bed)
54	SA1664 (1000)	1	Head hilow drive screw assembly (“E”, “F” version bed)

NOTES:

Foot Hilow Drive Assembly—P/N 43278-02 and 62003-02

Figure 5-40. Foot Hilow Drive Assembly—P/N 43278-02 and 62003-02

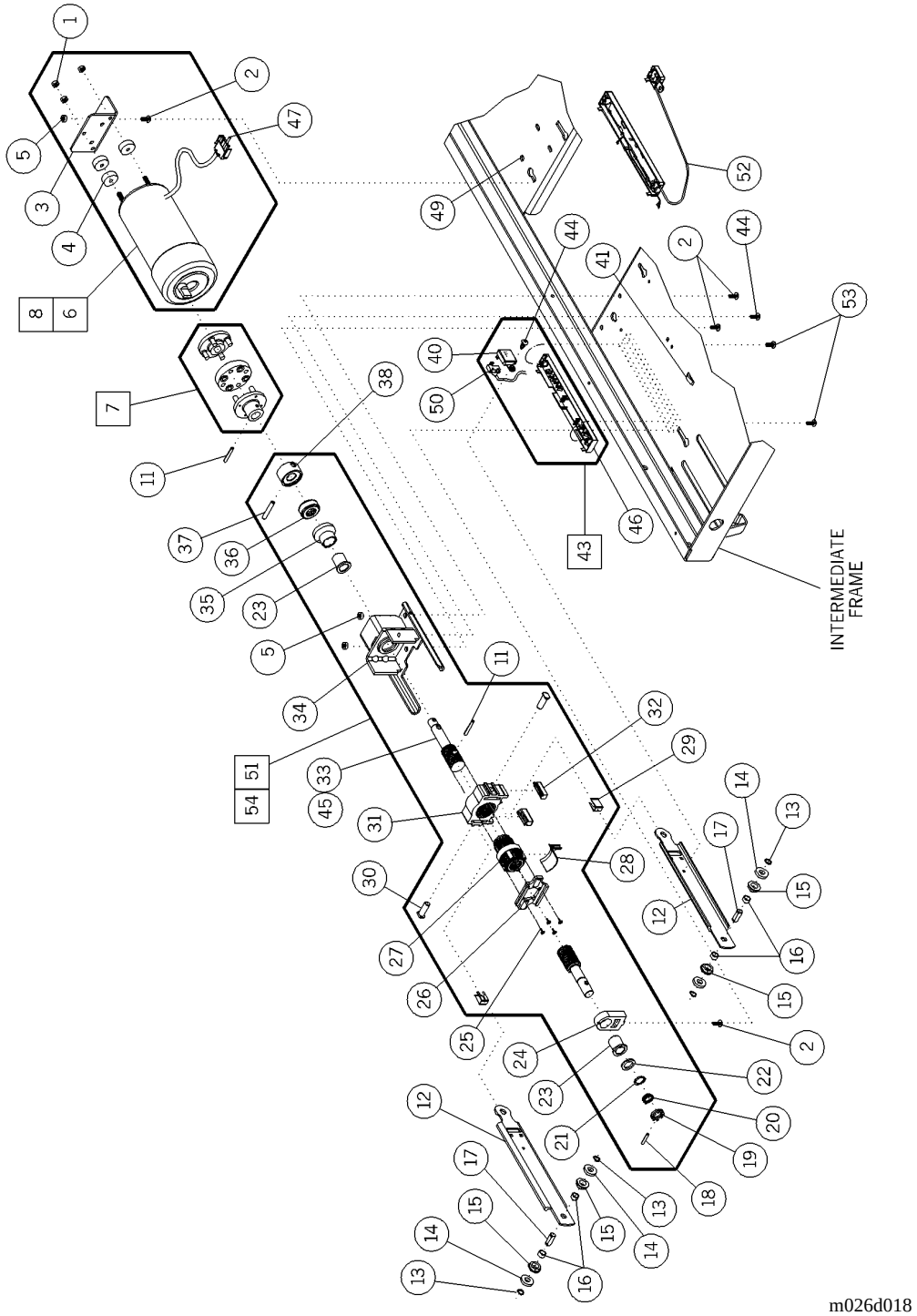

Table 5-61. Foot Hilow Drive Assembly—P/N 43278-02 and 62003-02

Item Number	Part Number	Quantity	Description
1	40497 (1000)	3	Keps nut
2	43880 (1000)	4	Torx pan head screw
3	43107 (1000)	1	Rear motor bracket
4	40480 (1000)	3	Isolation mount
5	43276 (1000)	3	Clinch nut
6	43369 (1000)	1	Hilow motor—115 volt
7	36250 (1000)	1	Coupling assembly
8	44529 (1000)	1	Hilow motor—230 volt
9			
10			
11	3517 (1000)	2	Spring pin
12	43232 (1000)	2	Hilow strap—short
13	12220 (1000)	4	Tru-arc ring
14	4540 (1000)	4	Washer
15	44265S (1000)	4	Bushing—double “D”
16	90263-04 (1000)	4	DU bushing
17	SA1592 (1000)	2	Single “D” shoulder bolt replacement
18	19636 (1000)	1	Slotted spring pin
19	34864 (1000)	1	Washer
20	34951 (1000)	1	Spring
21	43133 (1000)	1	Retainer ring
22	43132 (1000)	1	Washer
23	42847 (1000)	2	Radial thrust bearing
24	42846 (1000)	1	Radial bracket
25	42141 (1000)	4	Hilow screw
26	43334 (1000)	1	Hilow low limit
27	42845 (1000)	1	Lift nut
28	43702 (1000) or 61991 (1000)	1 1	Switch slide (“A”, “B”, “C” version bed) Switch slide assembly (“E”, “F” version bed)
29	43275 (1000)	2	Spring clip
30	42946 (1000)	2	Torque cage pin
31	42848 (1000)	1	Torque cage
32	43336 (1000)	2	Guide

Item Number	Part Number	Quantity	Description
33	43273 (1000)	1	Hilow/knee drive screw
34	43887-48 (1000)	1	Thrust bracket assembly
35	42842 (1000)	1	Bearing end
36	43875 (1000)	1	Ball thrust bearing
37	44380 (1000)	1	Groove pin
38	42844 (1000)	1	Fixed end
39	22153 (1000)	1	Male pin
40	48833 (1000)	1	Foot hilow low limit housing (“A”, “B”, “C” version bed)
41	42878 (1000)	1	Extended limit switch (“A”, “B”, “C” version bed)
42	43385 (1000)	1	Scale switch (“A”, “B”, “C” version bed)
43	45751 (1000)	1	Hilow foot switch housing assembly (“A”, “B”, “C” version bed)
44	43878 (1000)	2	Torx button head screw
45	SA3351 (1000)	As required	Lithium grease
46	45747 (1000)	1	Hilow switch housing (“A”, “B”, “C” version bed)
47	43905 (1000)	1	Polarizing pin
48	30930 (1000)	1	Plug housing
49	43930 (1000)	3	Male pin
50	43384 (1000)	1	Limit switch (“A”, “B”, “C” version bed)
51	43273S3 (1000)	1	Foot hilow drive screw assembly (“A”, “B”, “C” version bed)
52	61492 (1000)	1	Hilow foot limit assembly (“E”, “F” version bed)
53	43389 (1000) or 61997 (1000)	2 2	Hilow torx screw (“A”, “B”, “C” version bed) Screw, hilow, pan, torx (“E”, “F” version bed)
54	SA1665	1	Foot hilow drive screw assembly (“E”, “F” version bed)

NOTES:

CPR Cable Assembly—P/N 60945 (“E” and “F” Version Beds)

Figure 5-41. CPR Cable Assembly—P/N 60945 (“E” and “F” Version Beds)

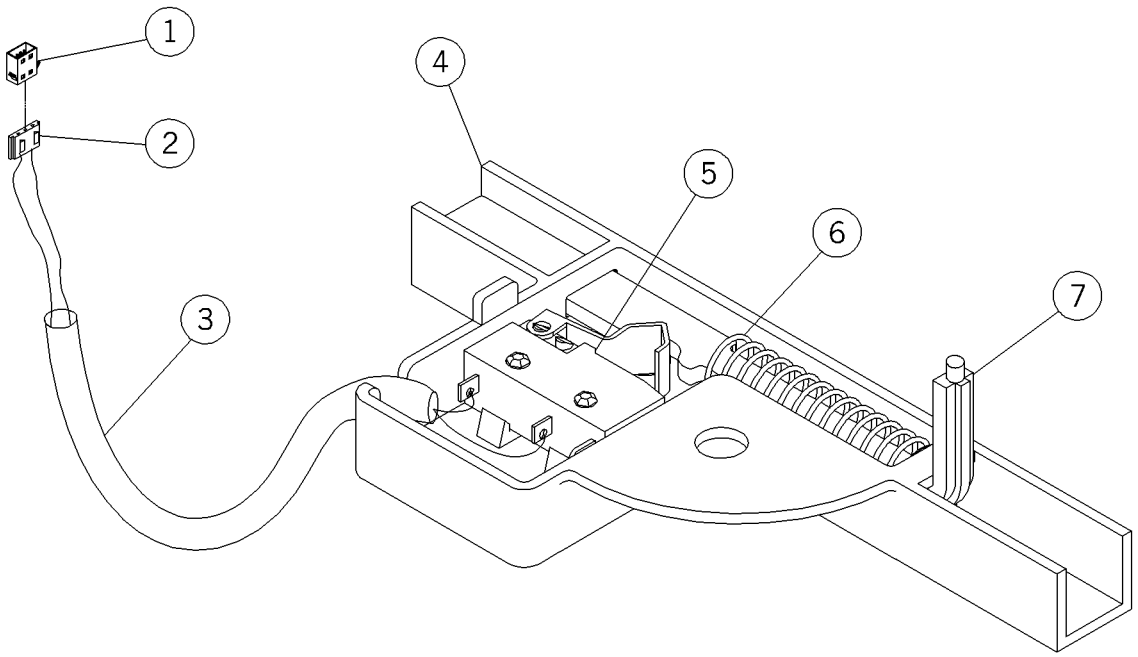

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Table 5-62. CPR Cable Assembly—P/N 60945 (“E” and “F” Version Beds)

Item Number	Part Number	Quantity	Description
1	4467803 (1000)	1	Connector
2	4585003 (1000)	1	Connector
3	3069601 (1000)	0.5 lft	Cable, two conductor, 26 awg
4	43710 (1000)	1	Switch housing
5	43384 (1000)	1	Limit switch
6	43711 (1000)	1	Spring
7	43712 (1000)	1	Actuator

High Voltage Power Control Board—P/N 42822-01/02/03

Figure 5-42. High Voltage Power Control Board—P/N 42822-01/02/03

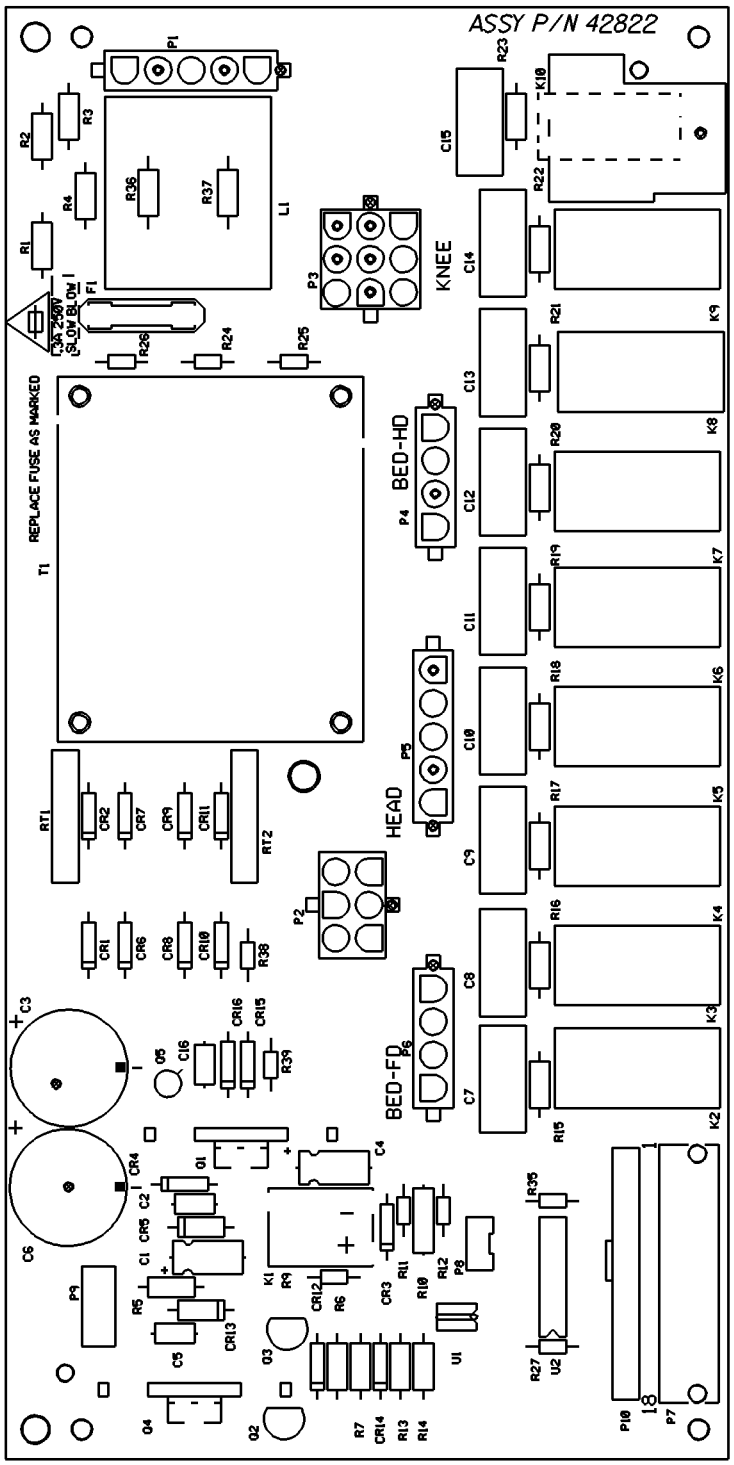

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Table 5-63. High Voltage Power Control Board—P/N 42822-01/02/03

Component Symbol	Part Number	Description
C1, C4	30116 (1000)	Capacitor
C2, C5	30109-104K (1000)	Capacitor
C3, C6	43669-478 (1000)	Capacitor
C7 through C15	42819 (1000)	Capacitor
C16	30109-333K (1000)	Capacitor
CR1, CR2, CR6 through CR11	30210-5401B (1000)	Diode
CR3, CR4, CR14 through CR16	30201-4003B (1000)	Diode silicon
CR5, CR13	30214-180A (1000)	Tranzorb
CR12	30200-4148B (1000)	Diode silicon
F1	43143-04 (1000)	Fuse
K1	43380 (1000)	Relay
K2 through K9	30702 (1000)	Relay
K10	30703 or 43148 (1000)	Relay (-01 and -02 options only)
L1	42818 (1000)	Filter (-03 option only)
P1	42835-05 (1000)	Connector
P2	42836-06 (1000)	Connector
P3	42836-09 (1000)	Connector
P4, P6	43145-04 (1000)	Connector
P5	43145-05 (1000)	Connector
P7	42837-18 (1000)	Connector
P8	30932 (1000)	Connector
P9	30995-04A (1000)	Connector, header post
P10	43231-18 (1000)	Connector
Q1, Q4	30314 (1000)	Regulator assembly
Q2	27321 (1000)	Transistor JFET
Q3	30300-3906A (1000)	Transistor
Q5	30310-2222A (1000)	Transistor
R1 through R3	30007-275 (1000)	Resistor
R4, R5	30007-106 (1000)	Resistor
R6	30007-182 (1000)	Resistor
R7, R14	30007-103 (1000)	Resistor
R9, R11, R12, R15 through R26, R36, R37	30016 (1000)	Resistor

Component Symbol	Part Number	Description
R10	475648R06 (1000)	Resistor
R13	30007-4715B (1000)	Resistor
R38	30006-103 (1000)	Resistor
R39	30006-472 (1000)	Resistor
RT1, RT2	43821-01 (1000)	PTC polyswitch
T1	30614 (1000)	Transformer
U1	30419 (1000)	Integrated circuit
U2	30414-2803A (1000)	Integrated circuit

NOTES:

Logic Control Board—P/N 44158-01/02/06

Figure 5-43. Logic Control Board—P/N 44158-01/02/06

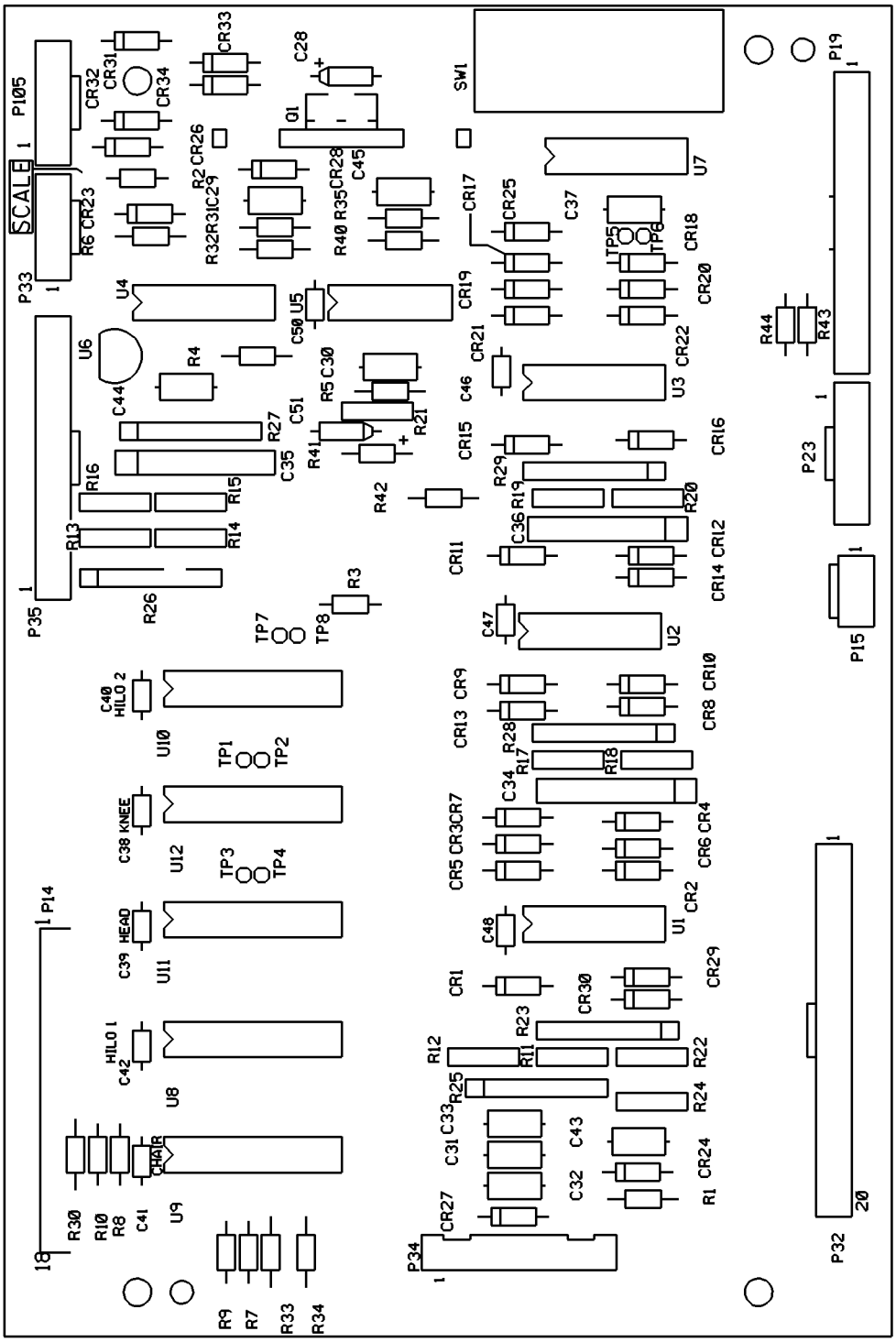

Table 5-64. Logic Control Board—P/N 44158-01/02/06

Component Symbol	Part Number	Description
C28, C51	30144-105 (1000)	Capacitor
C29, C31 through C33, C43 through C45	30109-104K (1000)	Capacitor
C30	30109-334K (1000)	Capacitor
C34 through C36	30133-104K (1000)	SIP capacitor
C37	30109-224K (1000)	Capacitor
C38 through C42, C46 through C48, C50	30109-473K (1000)	Capacitor
CR1 through CR3, CR5, CR7, CR9, CR11, CR13, CR15, CR17, CR19, CR21	30200-4148B (1000)	Diode silicon
CR4, CR6, CR8, CR10, CR12, CR14, CR16, CR18, CR20, CR22, CR28 through CR30	30214-100A (1000)	Tranzorb
CR23 through CR27, CR31 through CR34	30201-4003B (1000)	Diode silicon
P14	44155 (1000)	18 position flex cable
P23	43231-07 (1000)	Connector, 7 position
Q1	30317 (1000)	Regulator assembly
R1	30006-221 (1000)	Resistor
R2, R3, R7 through R10, R43	30016 (1000)	Resistor
R4, R6	30006-472 (1000)	Resistor
R5	30006-395 (1000)	Resistor
R11 through R22, R24	43264-222 (1000)	Resistor
R23, R26, R27	46264-100 (1000)	Resistor
R25, R28, R29	30023-824M (1000)	Resistor
R30, R35	30006-222 (1000)	Resistor
R31, R32	30006-271 (1000)	Resistor
R33, R34	30006-103 (1000)	Resistor
R40, R41	30006-824 (1000)	Resistor
R42	30006-100 (1000)	Resistor
SW1	46775 (1000)	Mercury switch
U1 through U3	30410-4042B (1000)	Integrated circuit
U4	30410-1413P (1000)	Integrated circuit
U5	30400-4093B (1000)	Integrated circuit

Component Symbol	Part Number	Description
U6	Not sold separately	Integrated circuit
U7	30410-14490 (1000)	Integrated circuit
U8	43330-10 (1000)	Hilow 1 pal
U9	43330-07 (1000)	Chair pal
U10	43330-11 (1000)	Hilow 2 pal
U11	43330-08 (1000)	Head pal
U12	43330-09 (1000)	Knee pal

NOTES:

Logic Control Board—P/N 61410-02 and 6141002 (“E” and “F” Version Beds)

Figure 5-44. Logic Control Board—P/N 61410-02 and 6141002 (“E” and “F” Version Beds)

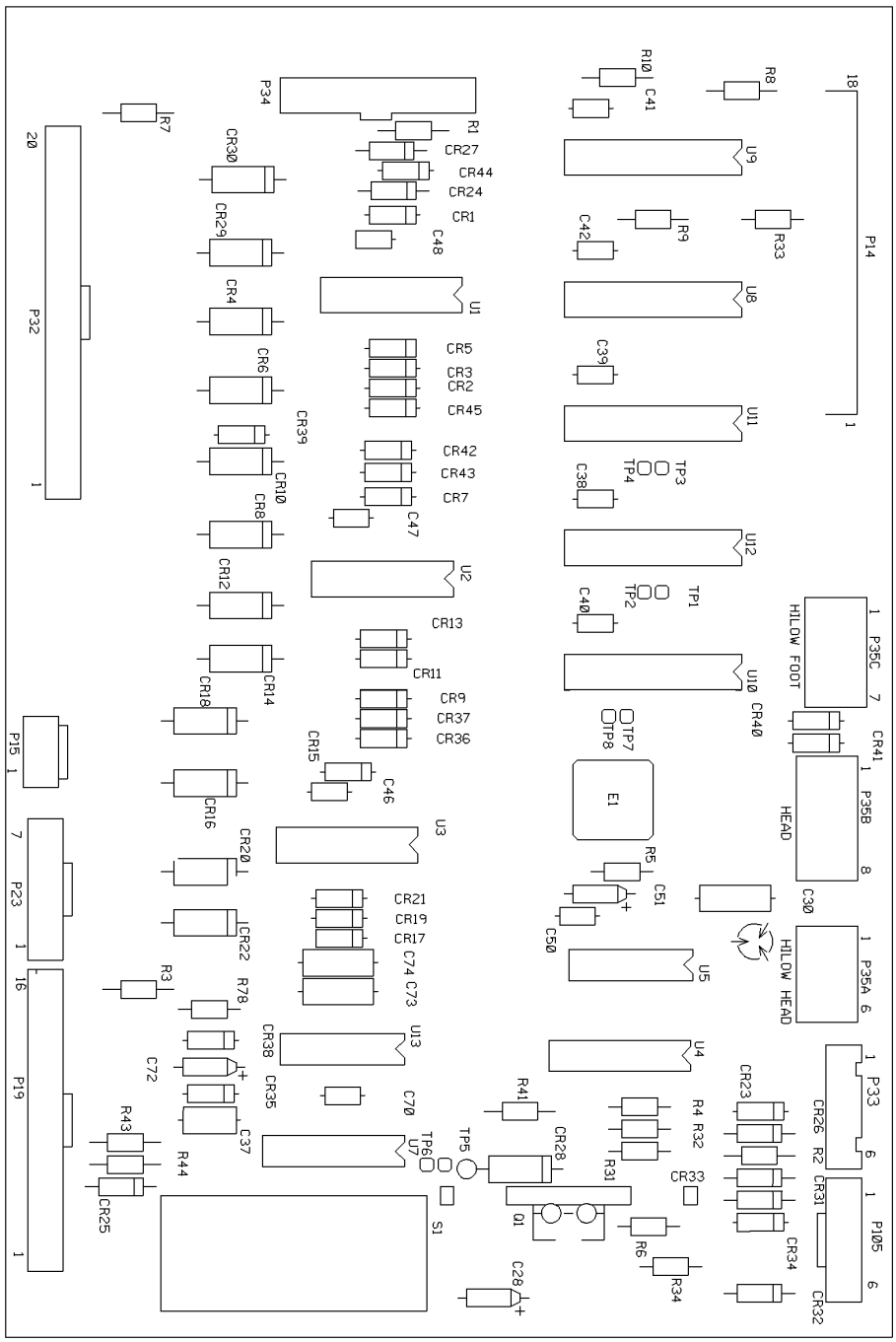

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Table 5-65. Logic Control Board—P/N 61410-02 and 6141002 (“E” and “F” Version Beds)

Component Symbol	Part Number	Description
C28, C51, C72	30144-105 (1000)	Capacitor
C30	30109-334K (1000)	Capacitor
C37	30109474M (1000)	Capacitor
C38 through C42, C46 through C48, C50, C70	30109-473K (1000)	Capacitor
C73, C74	30109105Z (1000)	Capacitor
CR1 through CR3, CR5, CR7, CR9, CR11, CR13, CR15, CR17, CR19, CR21, CR35 through CR45	30200-4148B (1000)	Diode silicon
CR4, CR6, CR8, CR10, CR12, CR14, CR16, CR18, CR20, CR22, CR28 through CR30	30214-100A (1000)	Tranzorb
CR23 through CR27, CR31 through CR34	30201-4003B (1000)	Diode silicon
P14	44155 (1000)	18 position flex cable
P15	43231-03 (1000)	Connector, 3 position
P19	43231-16 (1000)	Connector, 16 position
P23	43231-07 (1000)	Connector, 7 position
P32	43231-20 (1000)	Connector, 20 position
P33	30956-06 (1000)	Connector, 6 position
P34	43231-10 (1000)	Connector, 10 position
P35A	4447806 (1000)	Connector, 6 position
P35B	44478-08 (1000)	Connector, 8 position
P35C	4447807 (1000)	Connector, 7 position
P105	43231-06 (1000)	Connector, 6 position
Q1	30317 (1000)	Regulator assembly
R1	30006-221 (1000)	Resistor
R2, R3, R7 through R10, R43	30016 (1000)	Resistor
R4, R6, R78	30006-472 (1000)	Resistor
R5	30006-395 (1000)	Resistor
R31, R32	30006-271 (1000)	Resistor
R33, R34	30006-103 (1000)	Resistor
R41	30006-824 (1000)	Resistor

Component Symbol	Part Number	Description
SW1	46775 (1000)	Mercury switch
U1 through U3	30410-4042B (1000)	Integrated circuit
U4	30410-1413P (1000)	Integrated circuit
U5	30400-4093B (1000)	Integrated circuit
U7	30410-14490 (1000)	Integrated circuit
U8	43330-10 (1000)	Hilow 1 pal
U9	43330-07 (1000)	Chair pal
U10	43330-11 (1000)	Hilow 2 pal
U11	43330-08 (1000)	Head pal
U12	43330-09 (1000)	Knee pal
U13	304004047B (1000)	Integrated circuit

NOTES:

Night Light Board Assembly—P/N 43200-01/02

Figure 5-45. Night Light Board Assembly—P/N 43200-01/02

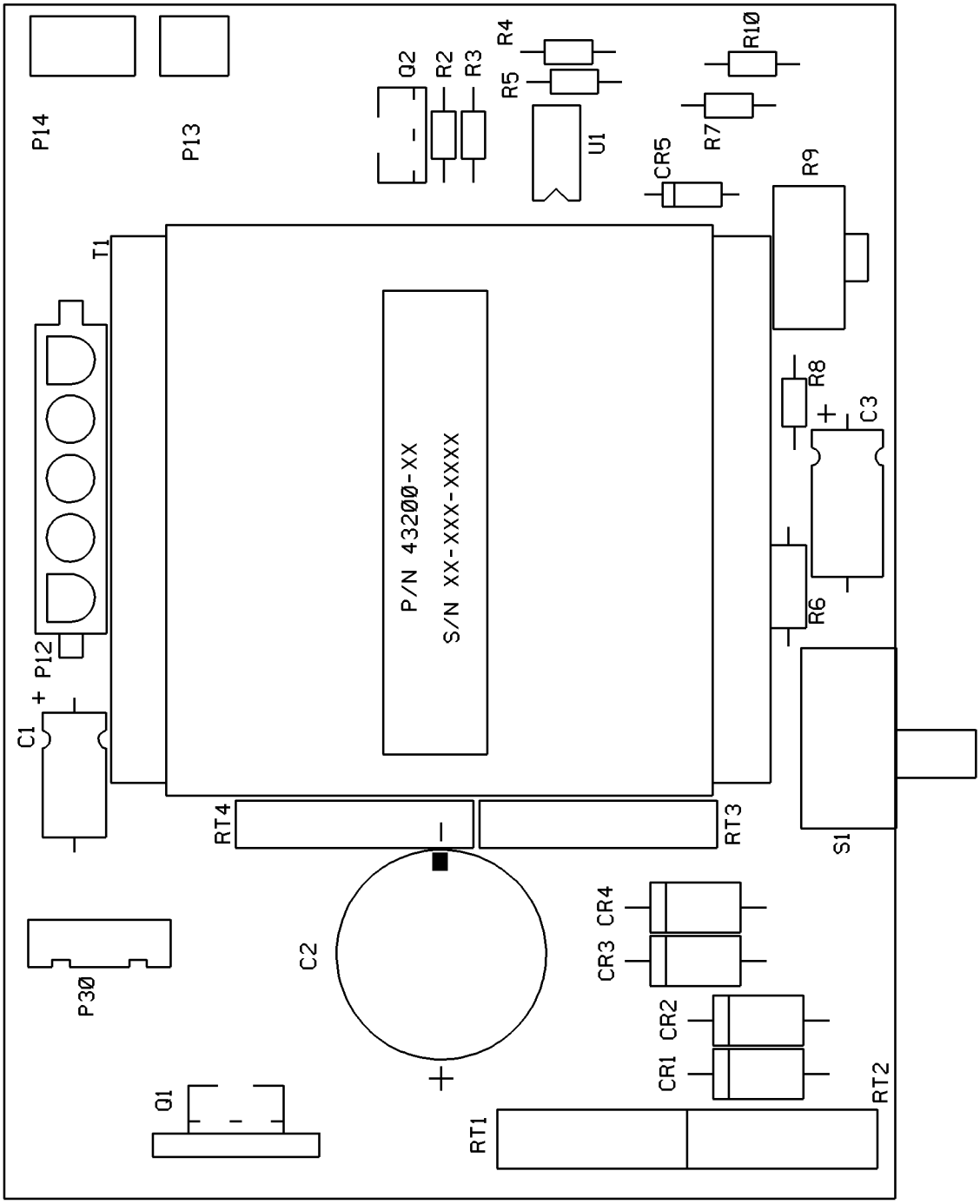

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Table 5-66. Night Light Board Assembly—P/N 43200-01/02

Component Symbol	Part Number	Description
C1	30127 (1000)	Capacitor
C2	43669-478 (1000)	Capacitor
C3	30108 (1000)	Capacitor
CR1 through CR4	30210-5401B (1000)	Diode
CR5	30201-4003B (1000)	Diode silicon
P12	42835-05 (1000)	Connector
P13	30995-02 (1000)	Connector header post
P14	30995-03A (1000)	Connector header post
P30	30956-05 (1000)	Connector
Q1	39616 (1000)	Regulator assembly
Q2	30323-01 (1000)	Triac
R2	30006-472 (1000)	Resistor
R3	30006-152 (1000)	Resistor
R4	30006-105 (1000)	Resistor
R5, R7, R8	30006-153 (1000)	Resistor
R6	30007-101 (1000)	Resistor
R9	30051 (1000)	Potentiometer
R10	30006-224 (1000)	Resistor
RT1, RT2	43821-02 (1000)	PTC polyswitch
RT3, RT4	44227-01 (1000)	PTC thermistor
S1	30808 (1000)	Switch, night light
T1	43197 (1000) 43151 (1000)	Transformer (P1115 and P1145) Transformer (P1116 and P1146)
U1	30406-741C (1000)	Integrated circuit

NOTE:
P/N 43200-01 board is for models P1115 and P1145. P/N 43200-02 board is for models P1116 and P1146.

Night Light Board Assembly Without Scale—P/N 48921

Figure 5-46. Night Light Board Assembly Without Scale—P/N 48921

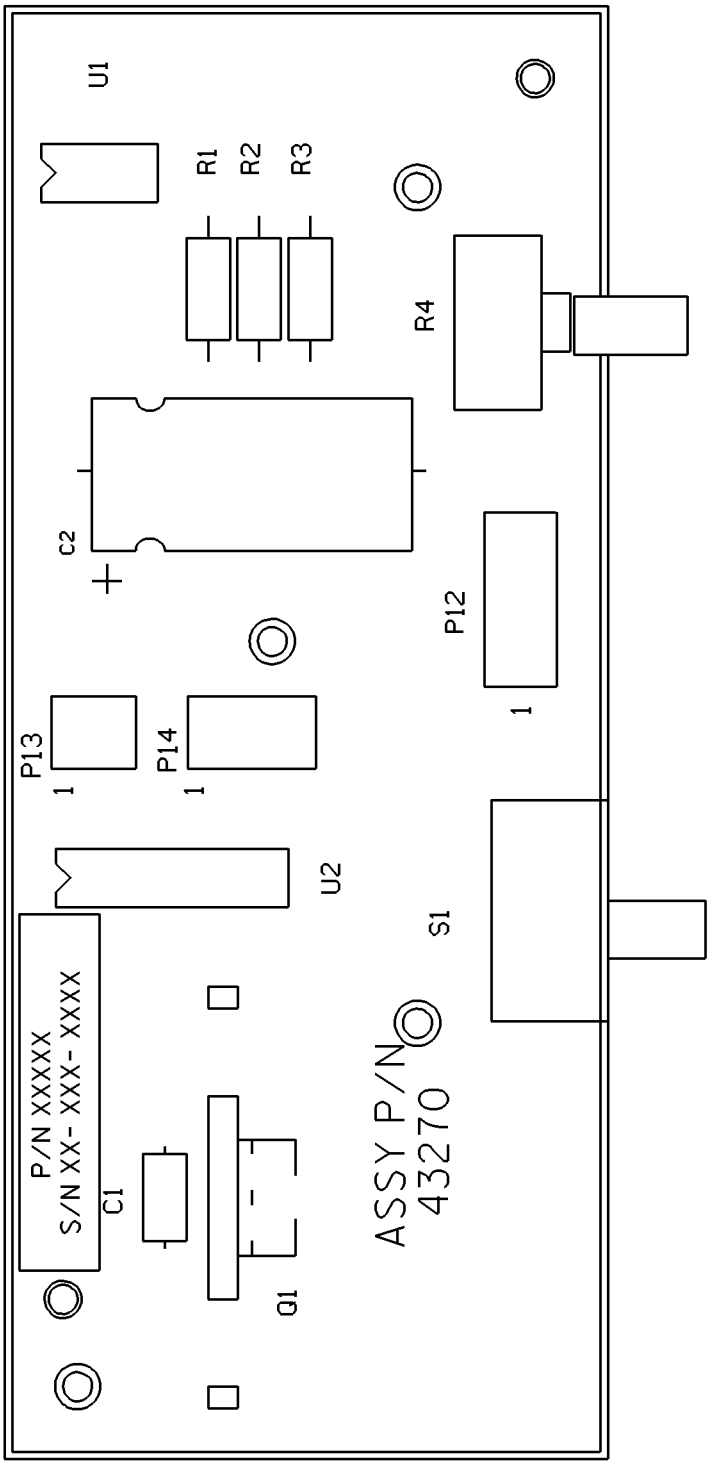

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Table 5-67. Night Light Board Assembly Without Scale—P/N 48921

Component Symbol	Part Number	Description
C1	30109-104K (1000)	Capacitor
C2	30122 (1000)	Capacitor
P12	30995-04A (1000)	Connector header post
P13	30995-02 (1000)	Connector header post
P14	30995-03A (1000)	Connector header post
Q1	30314 (1000)	Regulator assembly
R1	30007-6835B (1000)	Resistor
R2, R3	30007-273 (1000)	Resistor
R4	30051 (1000)	Potentiometer
S1	30808 (1000)	Switch, night light
U1	30406-741C (1000)	Integrated circuit
U2	30411-2004A (1000)	Integrated circuit

NOTE:
This board is for models P1105, P1106, P1135, and P1136.

DynamicAire Sleep Surface Control P.C. Board Assembly— P/N 44047

Figure 5-47. DynamicAire Sleep Surface Control P.C. Board Assembly—P/N 44047

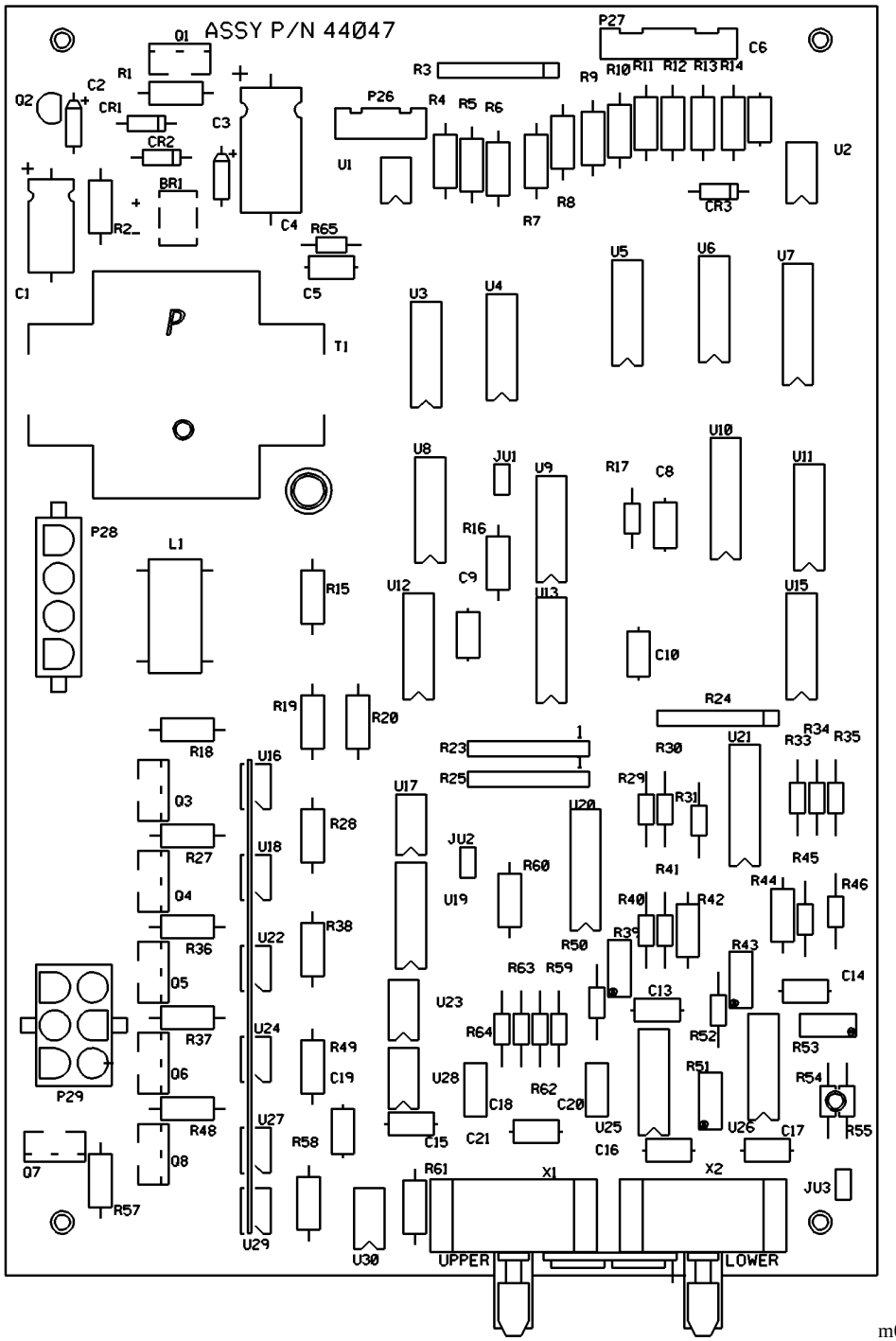

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Table 5-68. DynamicAire Sleep Surface Control P.C. Board Assembly— P/N 44047

Component Symbol	Part Number	Description
BR1	30205 (1000)	Diode assembly
C1	30108 (1000)	Capacitor
C2, C3	30144-105 (1000)	Capacitor
C4	30107 (1000)	Capacitor—ASIC board
C5, C6, C10, C13 through C17	30109-104K (1000)	Capacitor
C8	30109-334K (1000)	Capacitor
C9, C19, C21	30109-224K (1000)	Capacitor
C18, C20	30101-474K (1000)	Capacitor
CR1 through CR3	30201-4003B (1000)	Diode silicon
JU1 through JU3	30982-2 (1000)	Jumper
L1	30016 (1000)	Resistor
P26	30956-05 (1000)	Connector
P27	30934 (1000)	Connector
P28	30925 (1000)	Socket header
P29	30921 (1000)	Header—6 pin circuit
Q1	30315 (1000)	Regulator
Q2	30316 (1000)	Regulator
Q3, Q4	90003-02 (1000)	Triac
Q5 through Q8	30323-02 (1000)	Triac
R1, R2	30014 (1000)	Resistor
R3	30012-222 (1000)	Resistor
R4	30007-271 (1000)	Resistor
R5 through R10, R12, R42, R44	30007-104 (1000)	Resistor
R11, R16	30007-275 (1000)	Resistor
R13, R14	30007-221 (1000)	Resistor
R15	30007-106 (1000)	Resistor
R17	30006-475 (1000)	Resistor
R18, R27, R36, R37, R48, R57	30013-181 (1000)	Resistor
R19, R20, R28, R38, R49, R58	30007-181 (1000)	Resistor
R23	30018-273 (1000)	Resistor
R24	30012-103 (1000)	Resistor
R25	30018-105 (1000)	Resistor

Component Symbol	Part Number	Description
R29	30019-1240B (1000)	Resistor
R30	30019-2740B (1000)	Resistor
R31	30019-2210B (1000)	Resistor
R33	30019-3481B (1000)	Resistor
R34	30019-1101B (1000)	Resistor
R35	30019-5491B (1000)	Resistor
R39, R43	30054-101 (1000)	Potentiometer
R40	30019-1581B (1000)	Resistor
R41	30019-2801B (1000)	Resistor
R45, R46	30019-1004B (1000)	Resistor
R50	30019-2000B (1000)	Resistor
R51, R53	30054-104 (1000)	Potentiometer
R52	30019-1000B (1000)	Resistor
R54	30019-1003B (1000)	Resistor
R55	30019-1503B (1000)	Resistor
R59, R62 through R64	30019-1004B (1000)	Resistor
R60, R61	30007-225 (1000)	Resistor—formed
T1	30606 (1000)	Power transformer
U1	30419 (1000)	Integrated circuit
U2, U17, U23, U28	30405-40107 (1000)	Integrated circuit
U3, U4, U12	30400-4081B (1000)	Integrated circuit
U5, U8	30400-4071B (1000)	Integrated circuit
U6	30400-4073B (1000)	Integrated circuit
U7	30410-4049B (1000)	Integrated circuit
U9	30400-4093B (1000)	Integrated circuit
U10	30410-4040B (1000)	Integrated circuit
U11	30400-4024B (1000)	Integrated circuit
U13	30400-40106 (1000)	Integrated circuit
U15	30400-4013B (1000)	Integrated circuit
U16	30420-3010 (1000)	Integrated circuit
U18, U22, U24, U27, U29	30421 (1000)	Optocoupler
U19	30400-4012B (1000)	Integrated circuit
U20, U21	30403-LP365 (1000)	Integrated circuit
U25, U26	30402-101HP (1000)	Integrated circuit

Component Symbol	Part Number	Description
U30	30406-1458 (1000)	Integrated circuit
X1, X2	30710 (1000)	Transducer

ZoneAire Sleep Surface Power Supply Board—P/N 44719-01/02/03

Figure 5-48. ZoneAire Sleep Surface Power Supply Board—P/N 44719-01/02/03

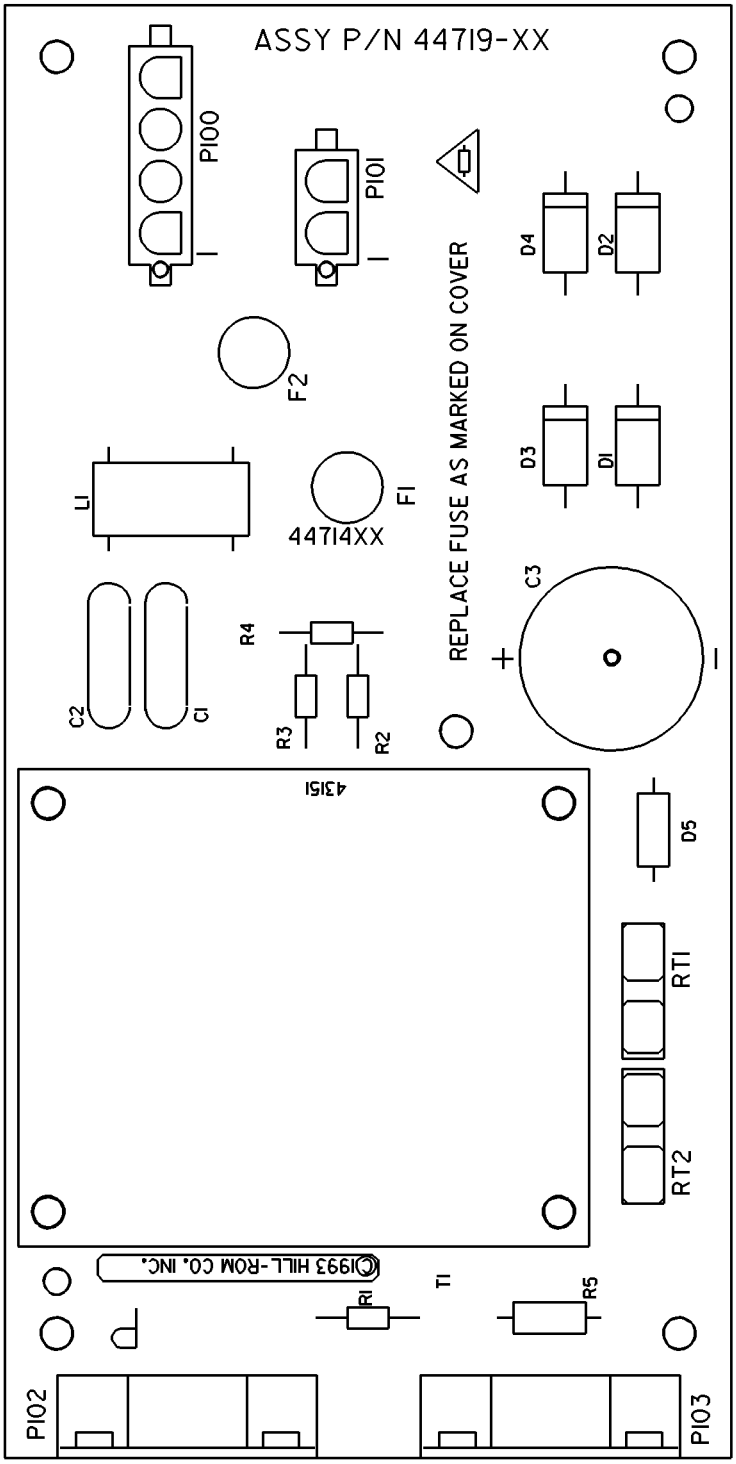

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Table 5-69. ZoneAire Sleep Surface Power Supply Board—P/N 44719-01/02/03

Component Symbol	Part Number	Description
C1, C2	30106 (1000)	Capacitor
C3	43669-478 (1000)	Capacitor
D1 through D4	30210-5401B (1000)	Diode
D5	30214-180A (1000)	Tranzorb
F1	44714-05 (1000) 44714-08 (1000) 44715-05 (1000)	Fuse (115V AC) Fuse (230V AC, UL/CSA approved) Fuse (230V AC, IEC approved)
F2	44715-18 (1000)	Fuse
L1	30611 (1000)	Torroid
P100	43145-04 (1000)	Connector (4 position)
P101	42835-02 (1000)	Connector (2 position)
P102, P103	44713-09 (1000)	Connector (9 position), DSUB, RA, socket
R2, R3, R4	30016 (1000)	Resistor
R5	30007-152 (1000)	Resistor
RT1, RT2	43618-03 (1000)	PTC thermistor
T1	43151 (1000)	Transformer

ZoneAire Sleep Surface Sensor Control Board—P/N 44740

Figure 5-49. ZoneAire Sleep Surface Sensor Control Board—P/N 44740

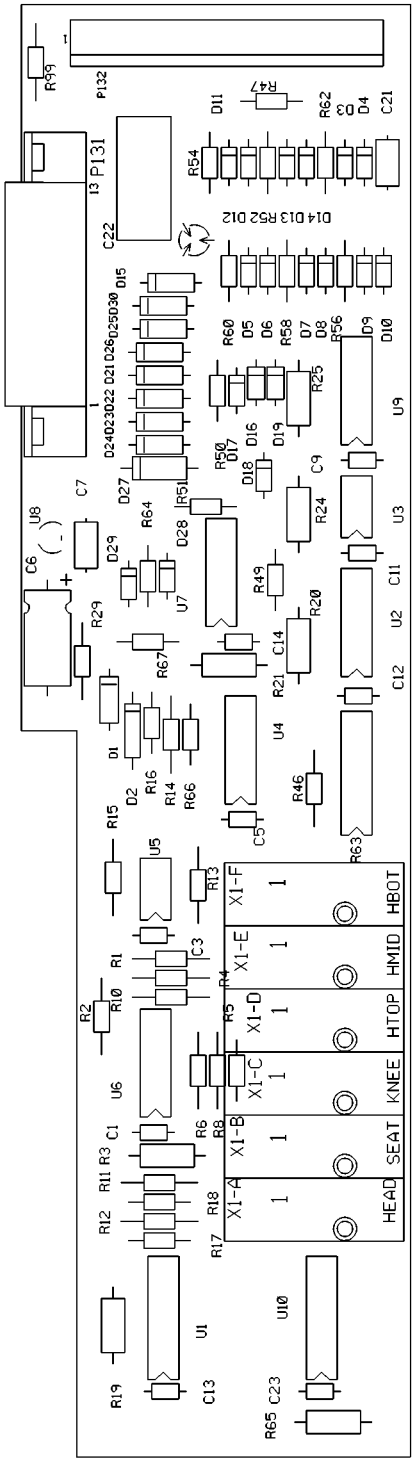

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Table 5-70. ZoneAire Sleep Surface Sensor Control Board—P/N 44740

Component Symbol	Part Number	Description
C1, C3, C5, C9, C11 through C14, C23	30109-473K (1000)	Capacitor
C6	30108 (1000)	Capacitor
C7, C21	30109-104K (1000)	Capacitor
C22	30129-105K (1000)	Capacitor
D1, D15, D21 through D26, D30	30214-050A (1000)	Diode
D2	30201-4003B (1000)	Diode silicon
D3 through D14, D17, D18, D28, D29	30200-4148B (1000)	Diode silicon
D16, D19	30208-5230B (1000)	Diode
D27	30214-180A (1000)	Tranzorb
P131	44713-25 (1000)	Connector (25 position), DSUB, RA, socket
P132	44818-13 (1000)	Connector header, 13 position
R1	30019-1623 (1000)	Resistor
R2	30019-1023 (1000)	Resistor
R3, R19 through R21, R24, R25, R65	30007-101 (1000)	Resistor
R4, R6, R8, R10, R12, R15 through R18	30019-2103 (1000)	Resistor
R5	30019-1651 (1000)	Resistor
R11, R13	30019-1053 (1000)	Resistor
R14	30019-7502 (1000)	Resistor
R29, R99	30016 (1000)	Resistor
R46	30019-1543 (1000)	Resistor
R47, R52, R54, R56, R58, R60, R62, R64	30006-103 (1000)	Resistor
R49, R50	30006-620 (1000)	Resistor
R51, R66	30006-102 (1000)	Resistor
R63	45015-103 (1000)	Resistor, DIP, R/2R
R67	30006-104 (1000)	Resistor
U1, U10	30410-14051 (1000)	Integrated circuit
U2	3040074HC16 (1000)	Integrated circuit
U3	30412-93C14 (1000)	Integrated circuit

Component Symbol	Part Number	Description
U4	30402-0834C (1000)	Integrated circuit
U5	30406-6032I (1000)	Integrated circuit
U6	30402-LM324 (1000)	Integrated circuit
U7	30400-74HC0 (1000)	Integrated circuit
U8	30312-2931 (1000)	Integrated circuit
U9	3040074HC14 (1000)	Integrated circuit
X1 through X6	44741 (1000)	Pressure sensor assembly

NOTES:

ZoneAire Sleep Surface Air Control P.C. Board Assembly— P/N 44760-01, 4476002 and 4476003

Figure 5-50. ZoneAire Sleep Surface Air Control P.C. Board Assembly— P/N 44760-01, 4476002 and 4476003 (Sheet 1 of 2)

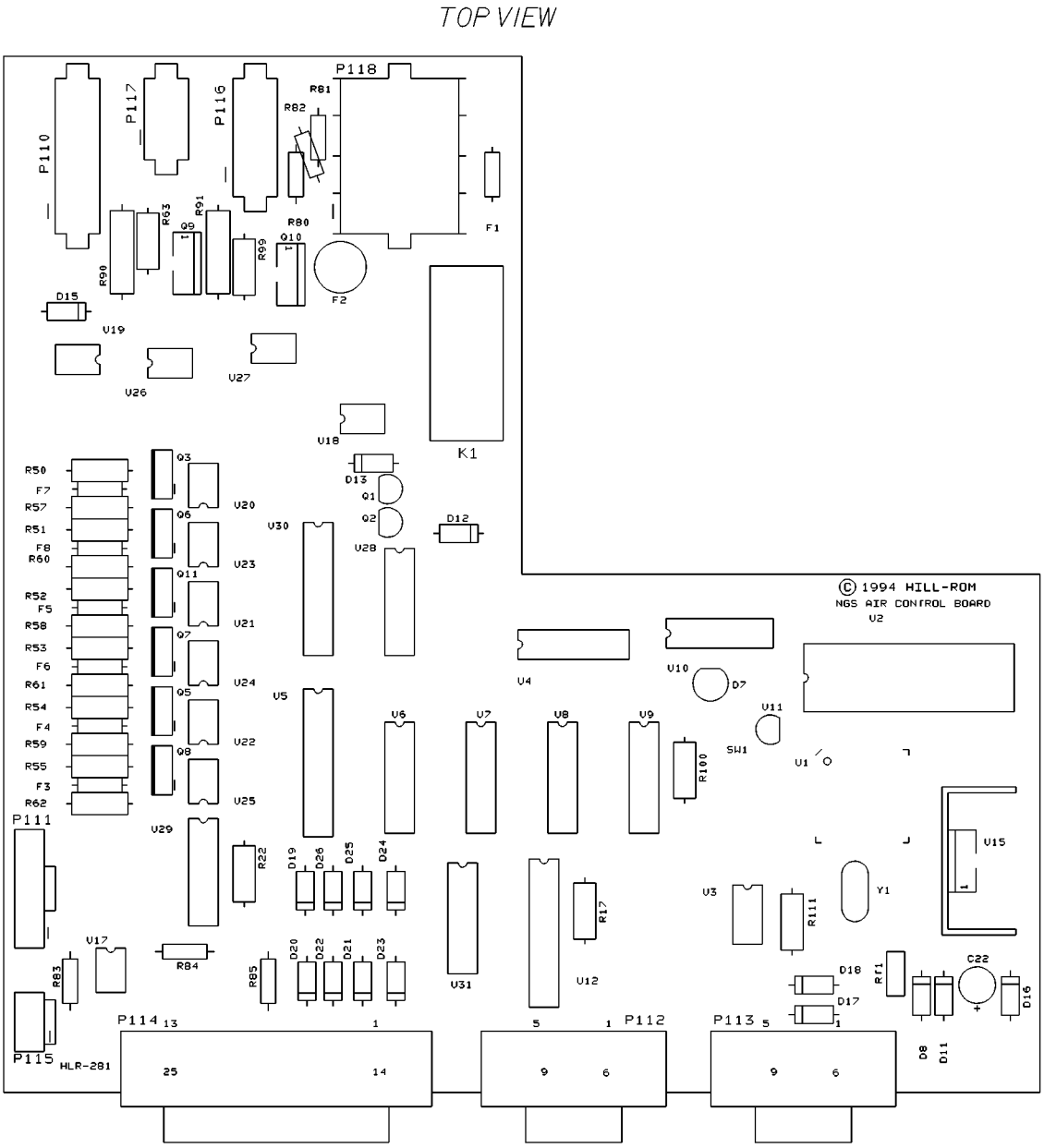

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Figure 5-51. ZoneAire Sleep Surface Air Control P.C. Board Assembly— P/N 44760-01, 4476002 and 4476003 (Sheet 2 of 2)

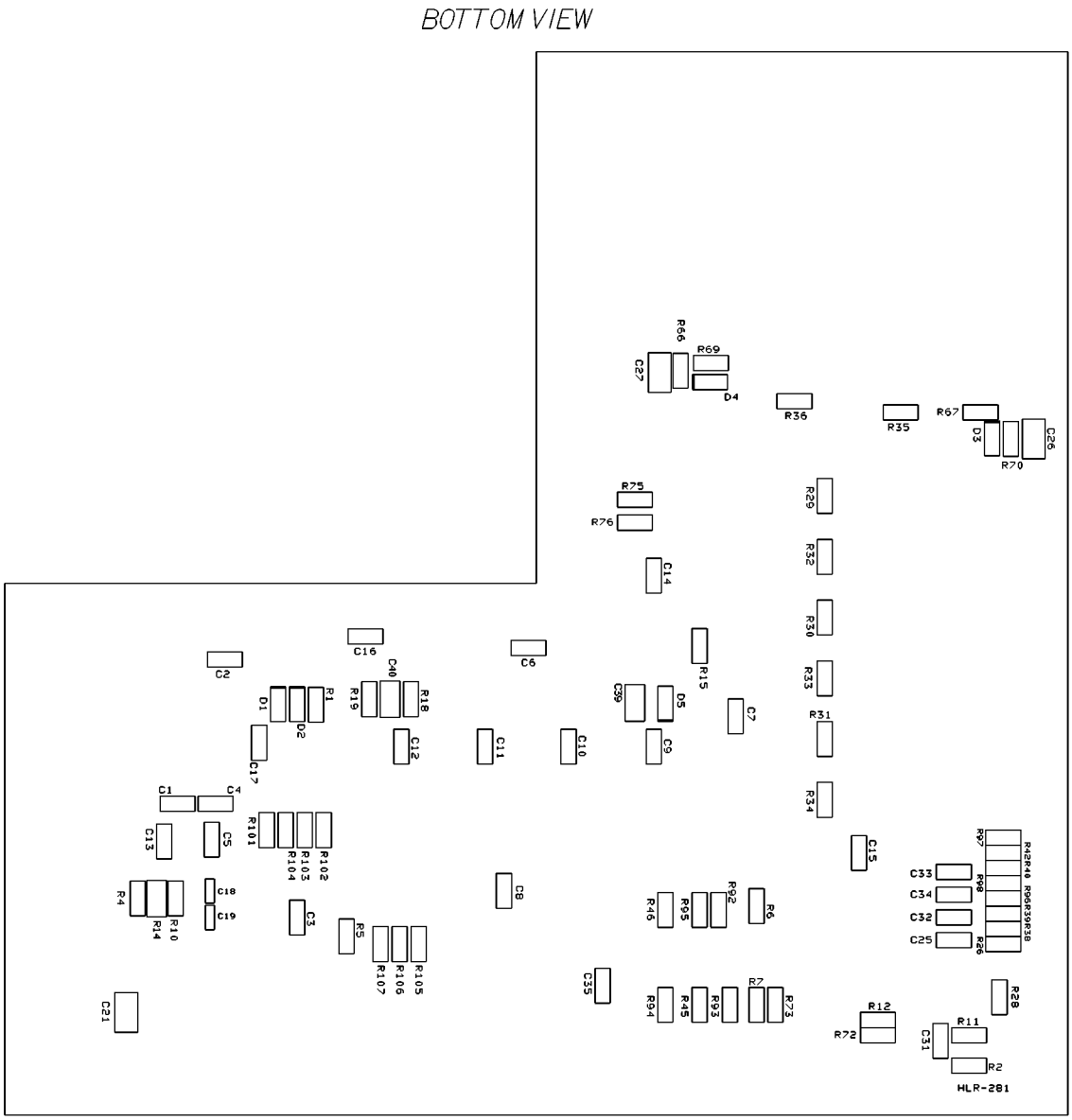

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Table 5-71. ZoneAire Sleep Surface Air Control P.C. Board Assembly— P/N 44760-01, 4476002 and 4476003

Component Symbol	Part Number	Description
C1 through C17, C25, C31 through C35	47642104K3C (1000)	Capacitor
C18, C19	47641330J3A (1000)	Capacitor
C21	47644334K3C (1000)	Capacitor
C22	30125101M (1000)	Capacitor
C26, C27	47644474K3C (1000)	Capacitor
C39, C40	47643103K3A (1000)	Capacitor
D1, D2	47683BAS85 (1000)	Diode
D3 through D5	488564148 (1000)	Diode
D7	30319 (1000)	LED red
D8	30214-180A (1000)	Tranzorb
D11 through D13	30201-4003B (1000)	Diode silicon
D15	302014005B (1000)	Diode
D16 through D26	30214-050A (1000)	Diode
F1	4471612 (1000)	Fuse (115V AC, 3.5A, UL/CSA approved)
F2	4471415 (1000) 4471512 (1000)	Fuse (250V AC, 1.25A, UL/CSA approved) Fuse (250V AC, 500 ma, IEC approved)
F3 through F8	4471612 (1000)	Fuse (115V AC, 0.75A, UL/CSA approved)
K1	30707 (1000)	Relay
P110	43145-04 (1000)	Connector (4 position)
P111	43231-07 (1000)	Connector 7 position
P112	44713-09 (1000) or 4867109 (1000)	Connector (9 position straight), DSUB, RA, socket or Connector (9 position vertical)
P113	44713-09 (1000)	Connector (9 position), DSUB, RA, socket
P114	44713-25 (1000) or 4867125 (1000)	Connector (25 position straight), DSUB, RA, socket or Connector (25 position vertical)
P115	43231-03 (1000)	3 position amp connector

Component Symbol	Part Number	Description
P116	41543-02 (1000)	Connector (3 position)
P117	42835-02 (1000)	Connector (2 position)
P118	30965 (1000)	Connector (12 position)
Q1, Q2	303003904B	Transistor
Q3, Q5 through Q8, Q11	30323-01 (1000)	Triac
Q9, Q10	9000309 (1000)	Triac
R1, R2, R6, R45, R46, R92 through R95	47618102 (1000)	Resistor
R4, R5, R7	47618103 (1000)	Resistor
R14	47619271 (1000)	Resistor
R15, R42, R101 through R107	47618473 (1000)	Resistor
R17, R22, R100	30007-101 (1000)	Resistor
R18	47618393 (1000)	Resistor
R19	47618753 (1000)	Resistor
R29 through R36	47619151 (1000)	Resistor
R38, R39	47618222 (1000)	Resistor
R40, R72, R73	47618474 (1000)	Resistor
R50 through R55	30007-472 (1000)	Resistor
R57 through R63, R99	30024181 (1000)	Resistor
R66, R67	47618153 (1000)	Resistor
R69, R70	47618334 (1000)	Resistor
R75, R76	47618472 (1000)	Resistor
R80 through R83, R85	30016 (1000)	Resistor
R90, R91	43619473 (1000)	Resistor
R111	30007121 (1000)	Resistor
RT1	4382103 (1000)	PTC
U1	478003150 (1000)	Integrated circuit
U2	4892801 (1000)	OTP assembly
U3	30478 (1000)	Integrated circuit
U4	3041074HC13 (1000)	Integrated circuit
U5	3041874HC24 (1000)	Integrated circuit
U6 through U9	3041074HC17 (1000)	Integrated circuit
U10	3040014541 (1000)	Integrated circuit
U11	30477 (1000)	Integrated circuit
U12	3041874HC24 (1000)	Integrated circuit

Component Symbol	Part Number	Description
U15	48714 (1000)	Regulator
U18	304468101 (1000)	Integrated circuit
U19	304468101TV (1000)	Integrated circuit
U20 through U25	30420-3010 (1000)	Integrated circuit
U26, U27	304453061TV (1000)	Integrated circuit
U28, U29	3040074HC14 (1000)	Integrated circuit
U30	30414-2803A (1000)	Integrated circuit
U31	30410SP720A (1000)	Integrated circuit
Y1	4836710R0D9 (1000)	Crystal

NOTES:

ZoneAire Sleep Surface Membrane Interface P.C. Board—P/N 44805

Figure 5-52. ZoneAire Sleep Surface Membrane Interface P.C. Board—P/N 44805 (Sheet 1 of 2)

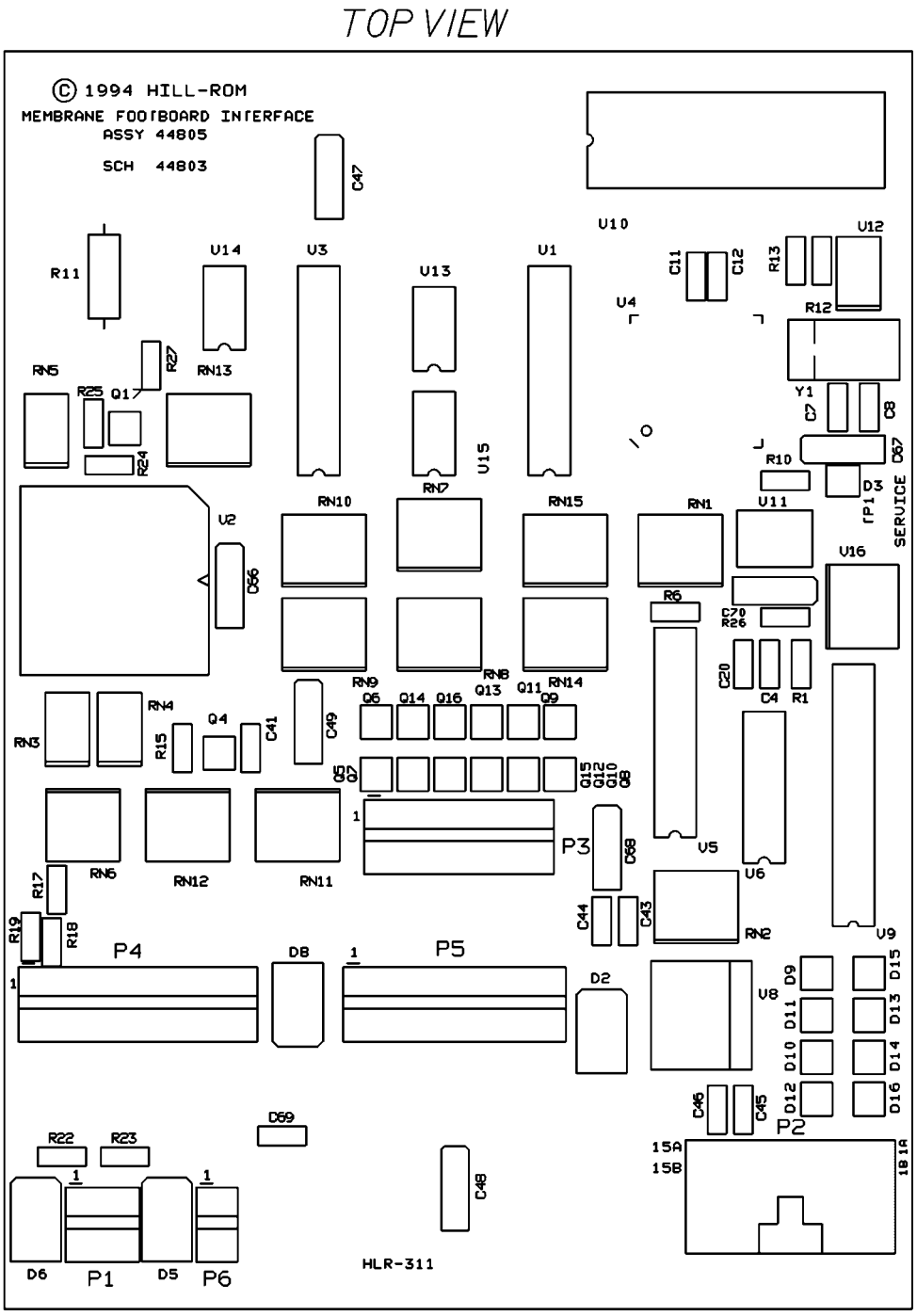

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Figure 5-53. ZoneAire Sleep Surface Membrane Interface P.C. Board—P/N 44805 (Sheet 2 of 2)

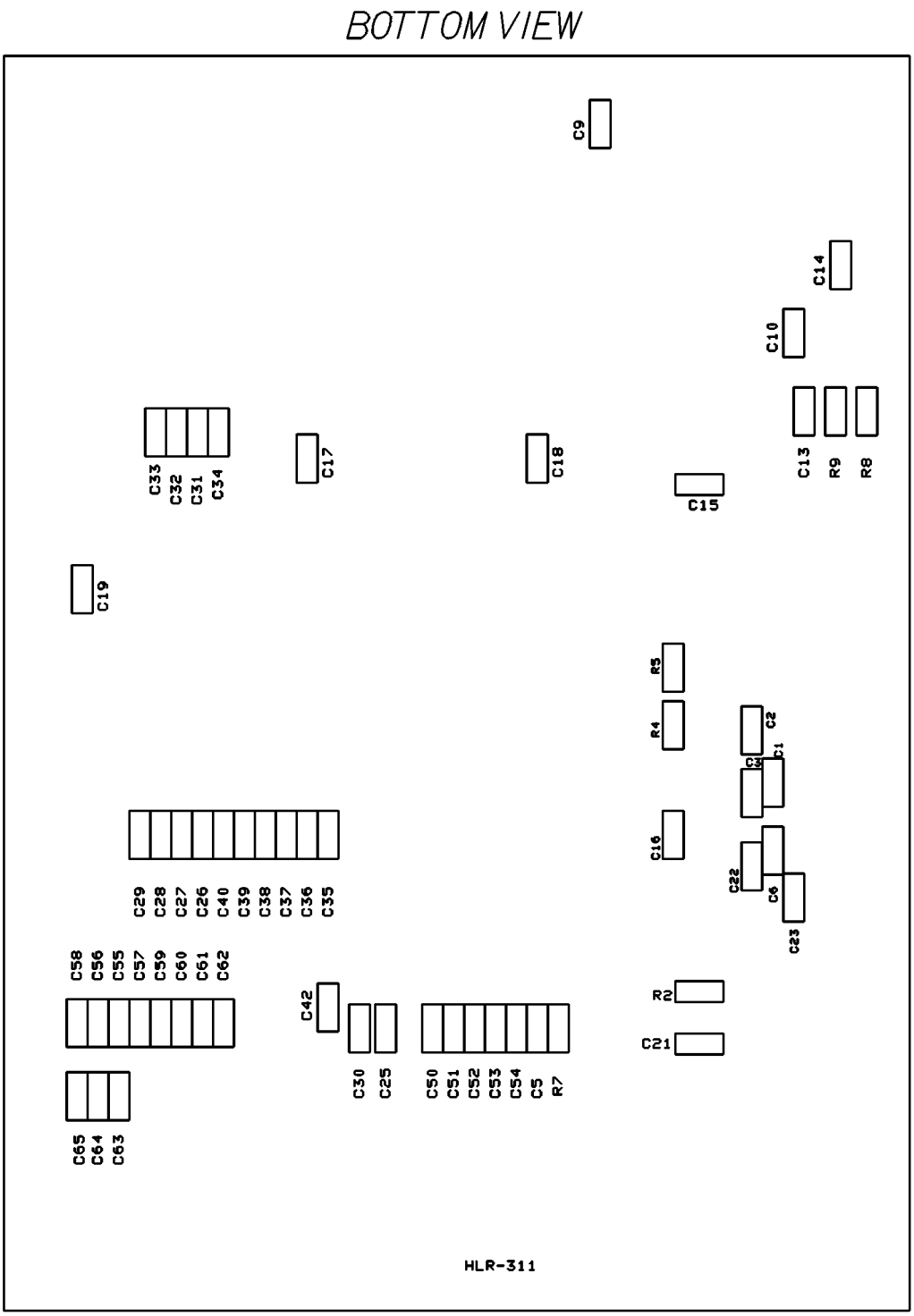

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Table 5-72. ZoneAire Sleep Surface Membrane Interface P.C. Board—P/N 44805

Component Symbol	Part Number	Description
C1 through C3, C5, C6, C9 through C46, C50 through C65, C69	47642103K3C (1000)	Capacitor
C4	47642102K3C (1000)	Capacitor
C7, C8	47642300J3A (1000)	Capacitor
C47 through C49, C66 through CC68, C70	47662225K7 (1000)	Capacitor
D2, D5, D6, D8	47681050 (1000)	Diode
D3	47922 (1000)	LED, super-red
D9 through D16	47680 (1000)	Diode, signal
P1	4447804 (1000)	Connector 4 position
P2	4837330H (1000)	Connector 30 position
P3	44478-11 (1000)	11 position ct connector
P4	44478-14 (1000)	Connector, 14 position
P5	4447813 (1000)	Connector 13 position
P6	44478-02 (1000)	Connector
Q4	479003906 (1000)	Transistor
Q5 through Q17	479002907 (1000)	Transistor
R1, R2	47619332 (1000)	Resistor
R4 through R7, R9	47619104 (1000)	Resistor
R8	47619471 (1000)	Resistor
R10, R15, R24, R27	47619102 (1000)	Resistor
R11	30007121 (1000)	Resistor
R12, R13, R25	47619103 (1000)	Resistor
R17, R19	47619511 (1000)	Resistor
R22, R23	47619100 (1000)	Resistor
R26	47619274 (1000)	Resistor
RN1, RN7, RN8, RN11 through RN13	47628104G16 (1000)	Resistor
RN2	47628183G16 (1000)	Resistor
RN3 through RN5	47628511G08 (1000)	Resistor
RN6	47628271G14 (1000)	Resistor
RN9, RN10, RN14, RN15	47628103G16 (1000)	Resistor
U1, U3	3041874HC24 (1000)	Integrated circuit

Component Symbol	Part Number	Description
U2	478075450 (1000)	Integrated circuit
U4	478003150 (1000)	Integrated circuit
U5	3041874HC24 (1000)	Integrated circuit
U6	3040074HC14 (1000)	Integrated circuit
U8	4770914489 (1000)	Display driver
U9	3044774HC15 (1000)	Integrated circuit
U10	4892901s (1000)	OPT assembly membrane interface board
U11	477131233Z1 (1000)	Reset
U12	4770075176 (1000)	Transceiver
U13 through U15	304016000 (1000)	Integrated circuit, diode clamp
U16	4770174HC32 (1000)	Integrated circuit

ZoneAire Sleep Surface Membrane Interface P.C. Board—P/N 62738

Figure 5-54. ZoneAire Sleep Surface Membrane Interface P.C. Board—P/N 62738 (Sheet 1 of 2)

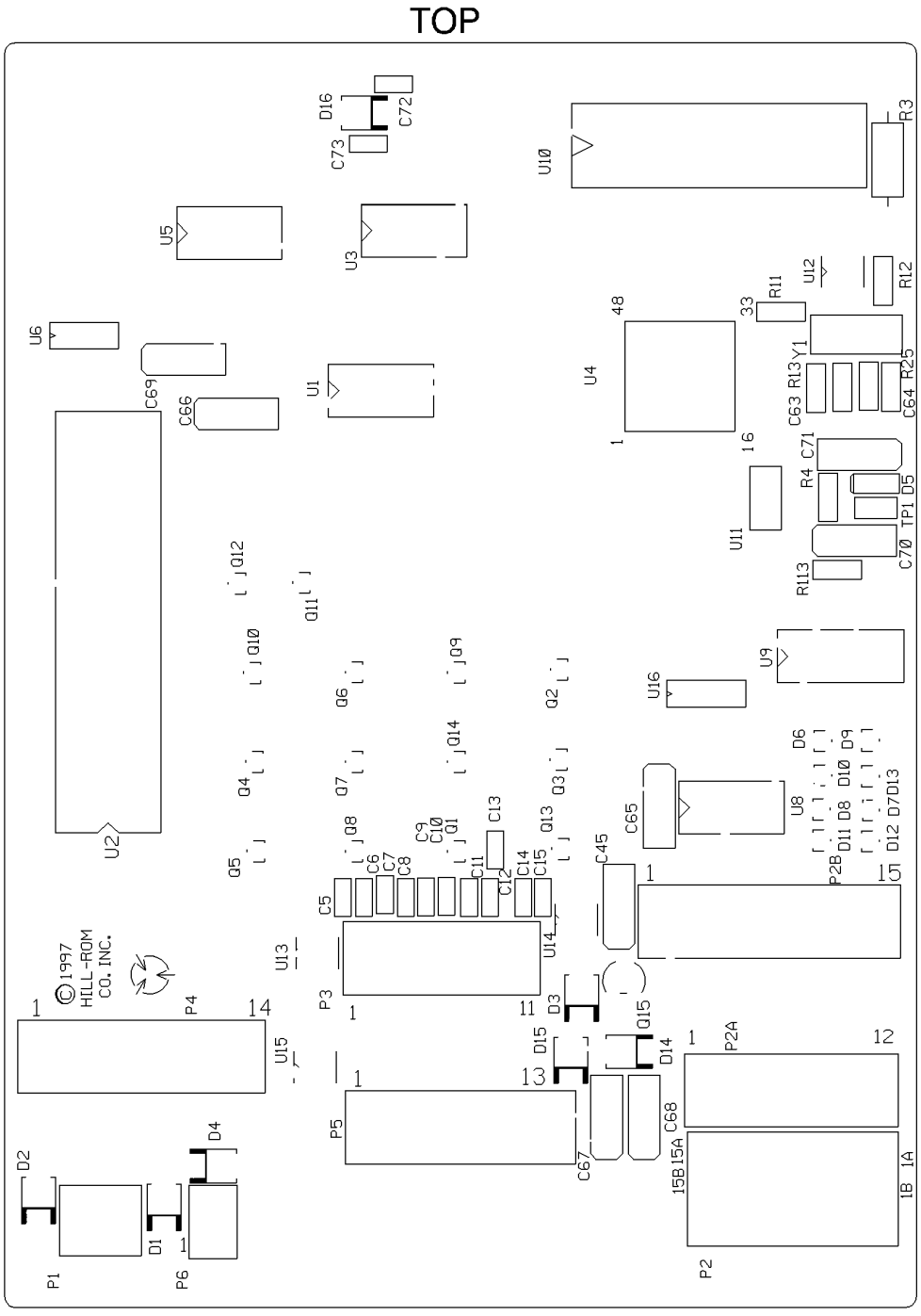

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Figure 5-55. ZoneAire Sleep Surface Membrane Interface P.C. Board—P/N 62738 (Sheet 2 of 2)

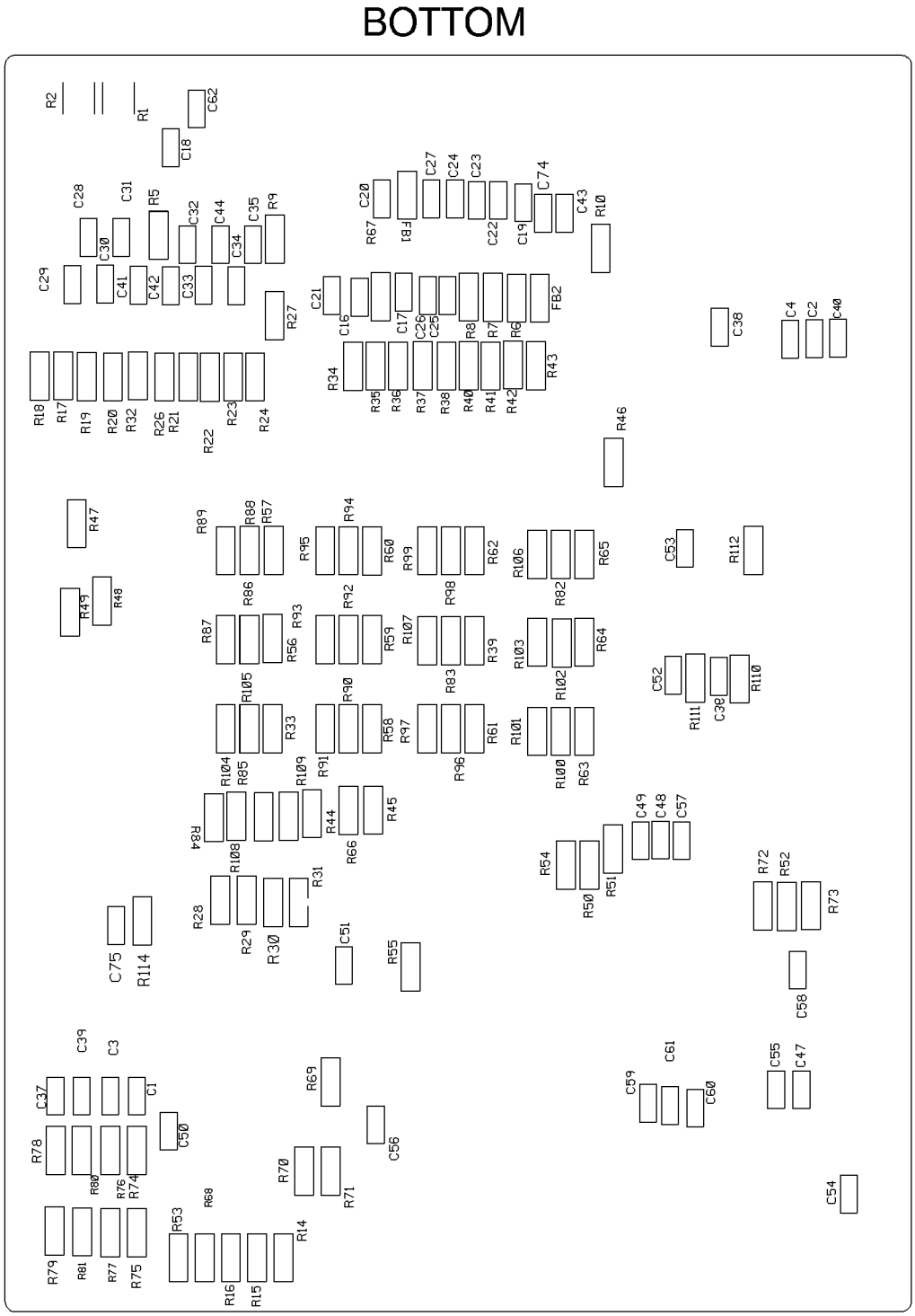

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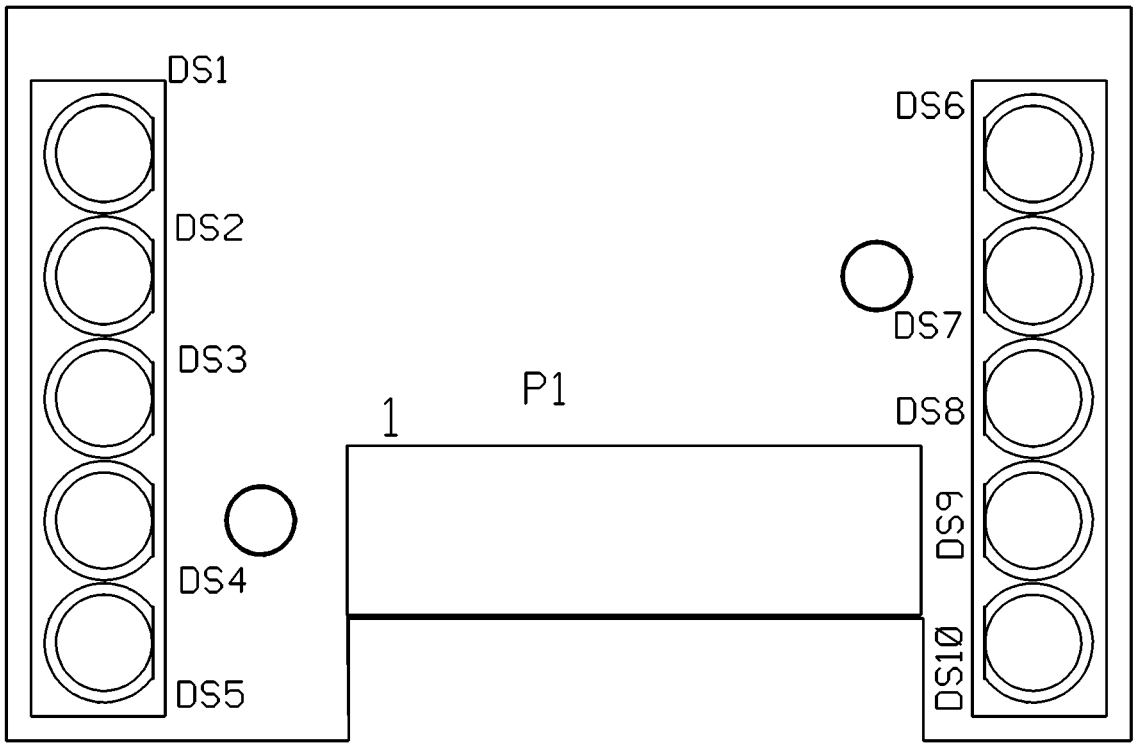
Table 5-73. ZoneAire Sleep Surface Membrane Interface P.C. Board—P/N 62738

Component Symbol	Part Number	Description
C1 through C35, C37 through C44, C47 through C62, C72 through C75	47641103 (1000)	Capacitor
C36	47641102 (1000)	Capacitor
C45, C65, C66 through C71	47662225K7 (1000)	Capacitor
C63, C64	47642300J3A (1000)	Capacitor
D1 through D4	47681050 (1000)	Transorb
D5	4792001 (1000)	LED, red
D6 through D13	47680 (1000)	Diode, signal
D14 through D16	47681180 (1000)	Transorb
FB1, FB2	3068301 (1000)	Ferrite bead
P1	4447804 (1000)	Connector, 4 position
P2	4837330H (1000)	Connector, 30 position
P2A	44478-12 (1000)	Connector, 12 position
P2B	4447815 (1000)	Connector, 15 position
P3	44478-11 (1000)	11 position ct connector
P4	44478-14 (1000)	Connector, 14 position
P5	4447813 (1000)	Connector, 13 position
P6	44478-02 (1000)	Connector, 2 position
Q1 through Q13	479002907 (1000)	Transistor
Q14	479003906 (1000)	Transistor
Q15	303122931 (1000)	Voltage regulator
R1, R2	47619100 (1000)	Resistor
R3	30007121 (1000)	Resistor
R4, R107 through R109	47618102 (1000)	Resistor
R5 through R9	47618271 (1000)	Resistor
R10, R113	47618000 (1000)	Resistor
R11, R12, R82 through R106	47618103 (1000)	Resistor
R13 through R16, R33 through R73	47618104 (1000)	Resistor
R17 through R24, R26 through R32	47618511 (1000)	Resistor
R25	47618471 (1000)	Resistor
R74 through R81	47618183 (1000)	Resistor

Component Symbol	Part Number	Description
R110, R112	47618332 (1000)	Resistor
R111	47618274 (1000)	Resistor
R114	47618101 (1000)	Resistor
U1, U3	3075901 (1000)	Integrated circuit
U2	62741 (1000)	Integrated circuit
U4	478003150 (1000)	Integrated circuit
U5	3004201 (1000)	Integrated circuit
U6	3068201 (1000)	Integrated circuit
U8	4770914489 (1000)	Display driver
U9	3004301 (1000)	Integrated circuit
U10	45795256090 (1000)	GCI programmed EPROM
U11	477131233Z1 (1000)	Reset
U12	4770075176 (1000)	Transceiver
U13 through U15	3089801 (1000)	Integrated circuit, diode clamp
U16	4770274HC4538 (1000)	Integrated circuit, multivibrator
Y1	4836701 (1000)	Crystal

ZoneAire Sleep Surface LED P.C. Board—P/N 44732

Figure 5-56. ZoneAire Sleep Surface LED P.C. Board—P/N 44732



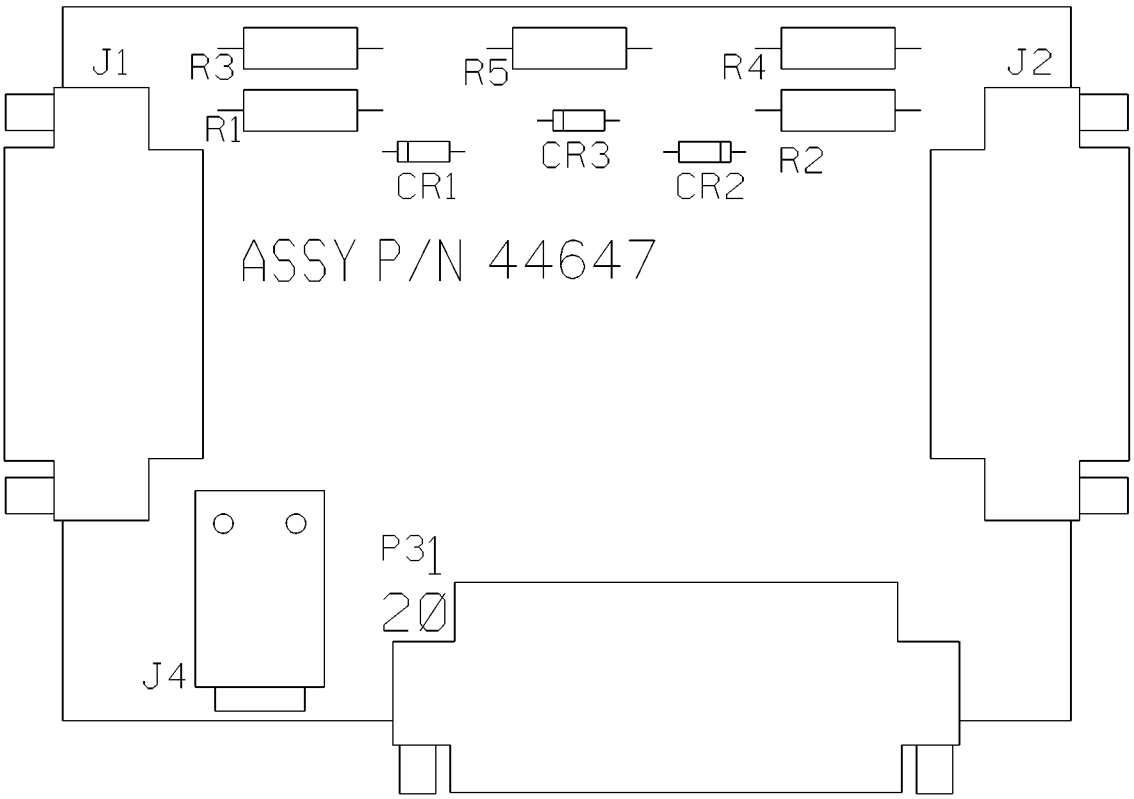
m026d203

Table 5-74. ZoneAire Sleep Surface LED P.C. Board—P/N 44732

Component Symbol	Part Number	Description
DS1, DS2	30302-01 (1000)	LED, red
DS3 through DS5, DS8 through DS10	30302-03 (1000)	LED, yellow
DS6, DS7	30302-02 (1000)	LED, green
P1	44478-14 (1000)	Connector, 14 position

Junction Box Assembly—P/N 44647

Figure 5-57. Junction Box Assembly—P/N 44647



m026d085

Table 5-75. Junction Box Assembly—P/N 44647

Component Symbol	Part Number	Description
CR1 through CR3	30201-4003B (1000)	Diode silicon
J1, J2	38346 (1000)	Receptacle—25 pin
J4	28665 (1000)	Phone jack
P3	38345 (1000)	Plug—37 pin
R1 through R4	30003-2025B (1000)	Resistor
R5	30003-1831B (1000)	Resistor

NOTE:
This is for "A" version beds **only**.

Junction Box Assembly—P/N 44647

Figure 5-58. Junction Box Assembly—P/N 44647

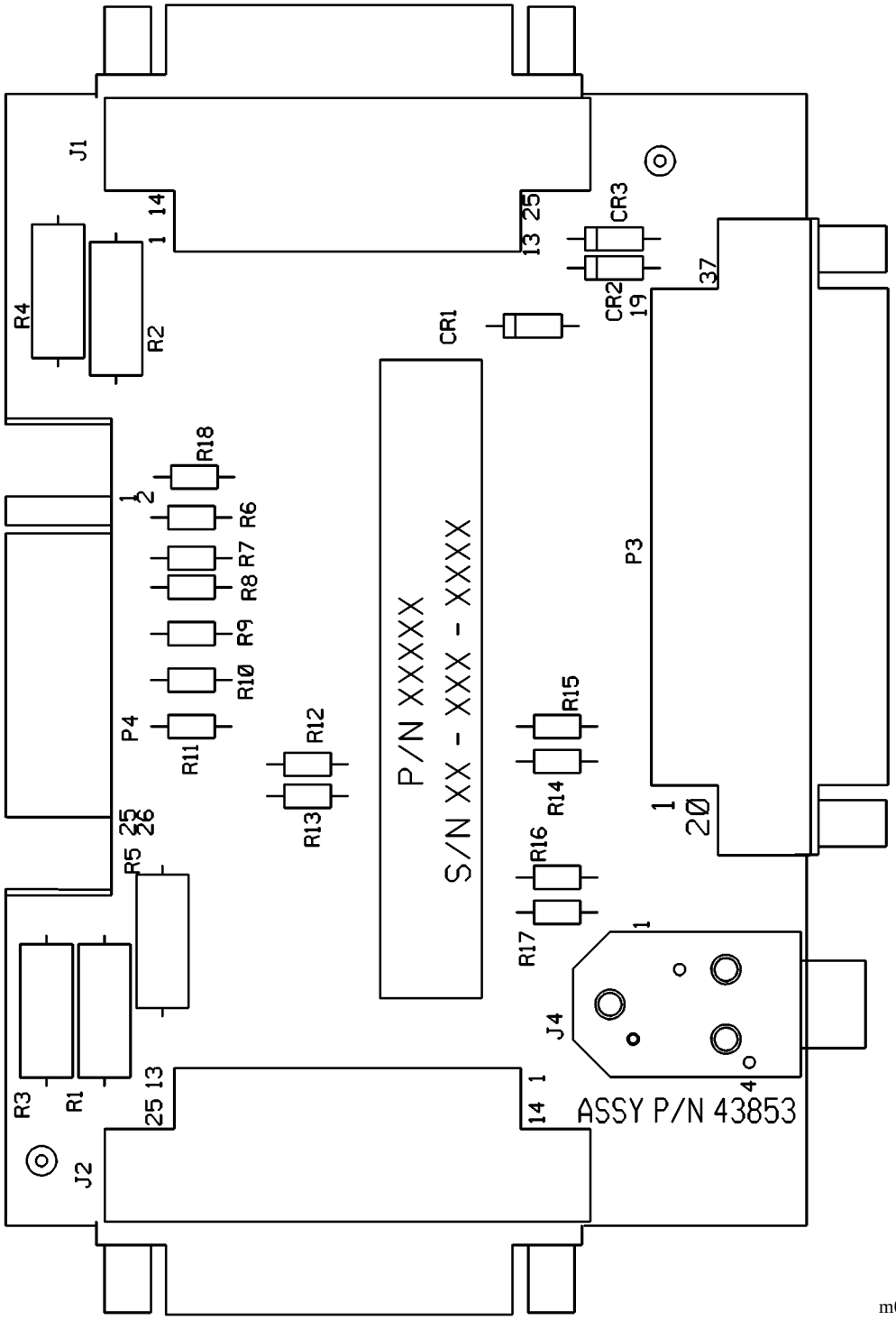


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Table 5-76. Junction Box Assembly—P/N 44647

Component Symbol	Part Number	Description
CR1 through CR3	30201-4003B (1000)	Diode silicon
J1, J2	38346 (1000)	Receptacle—25 pin
J4	28665 (1000)	Phone jack
P3	38345 (1000)	Plug—37 pin
R1 through R4	30024-202 (1000)	Resistor
R5	30024-183 (1000)	Resistor
R6 through R18	30016 (1000)	Resistor

NOTE:
This is for “B” version beds **only**.

Junction Box Assembly—P/N 45588-02

Figure 5-59. Junction Box Assembly—P/N 45588-02

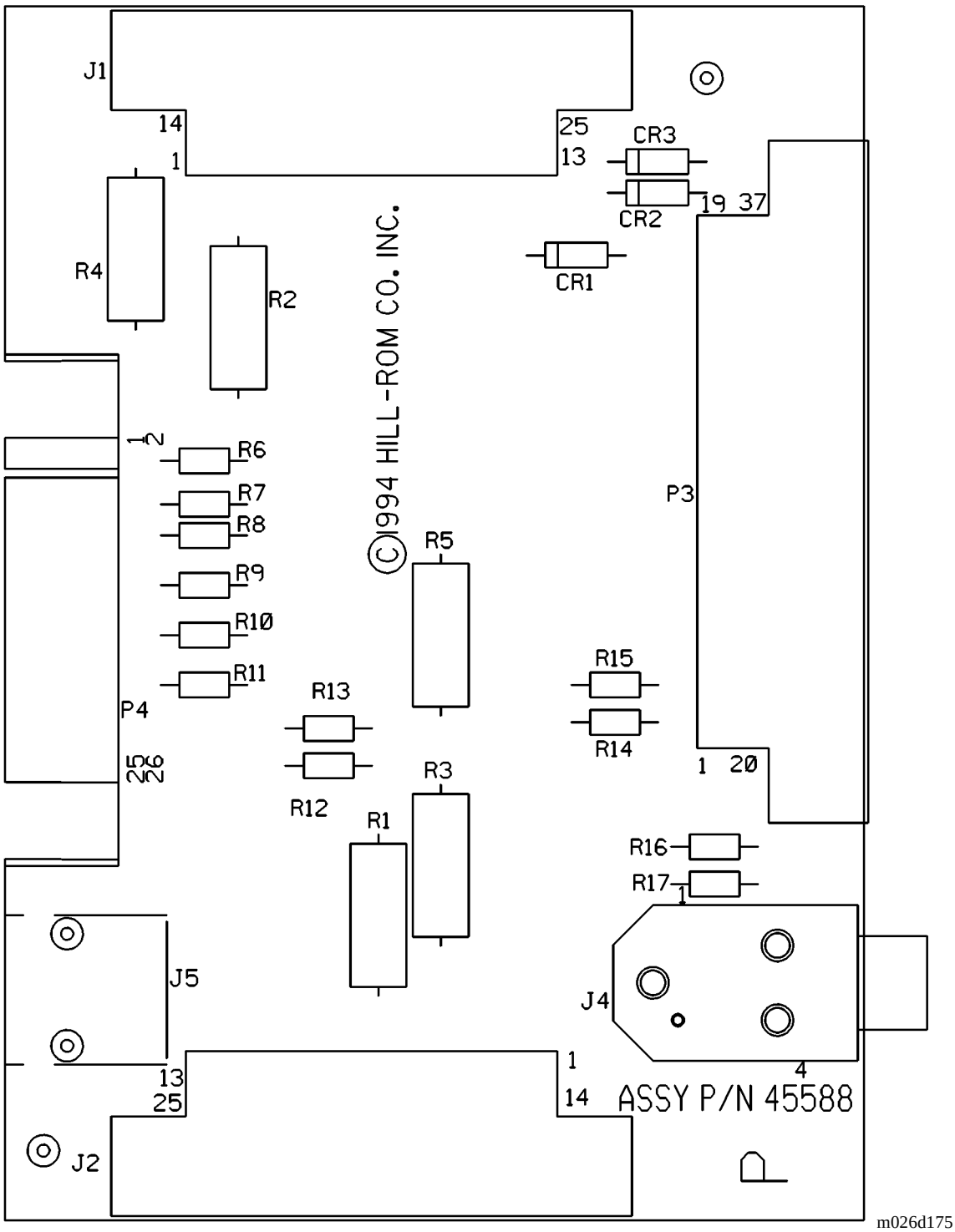


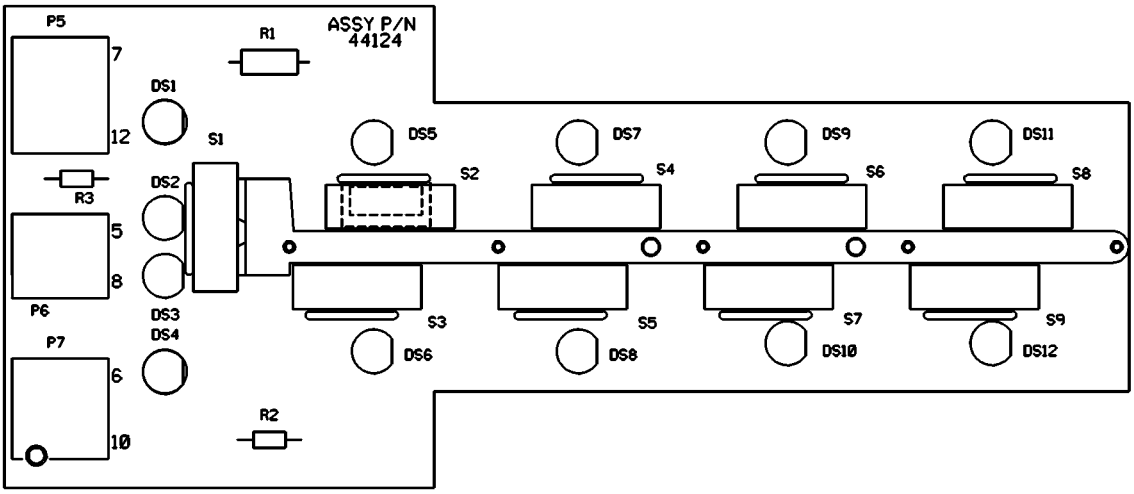
Table 5-77. Junction Box Assembly—P/N 45588-02

Component Symbol	Part Number	Description
CR1 through CR3	30201-4003B (1000)	Diode silicon
J1, J2	38346 (1000)	Receptacle—25 pin
J4	28665 (1000)	Phone jack
P3	38345 (1000)	Plug—37 pin
R1 through R4	30024-202 (1000)	Resistor
R5	30024-183 (1000)	Resistor
R6 through R17	30016 (1000)	Resistor

NOTE:
This is for “C” version beds **only**.

Patient Control Panel—P/N 44124-01/06, P/N 44195-02/03/04/05, and P/N 44196-02/03/04/05

Figure 5-60. Patient Control Panel—P/N 44124-01/06, P/N 44195-02/03/04/05, and P/N 44196-02/03/04/05



m026d132

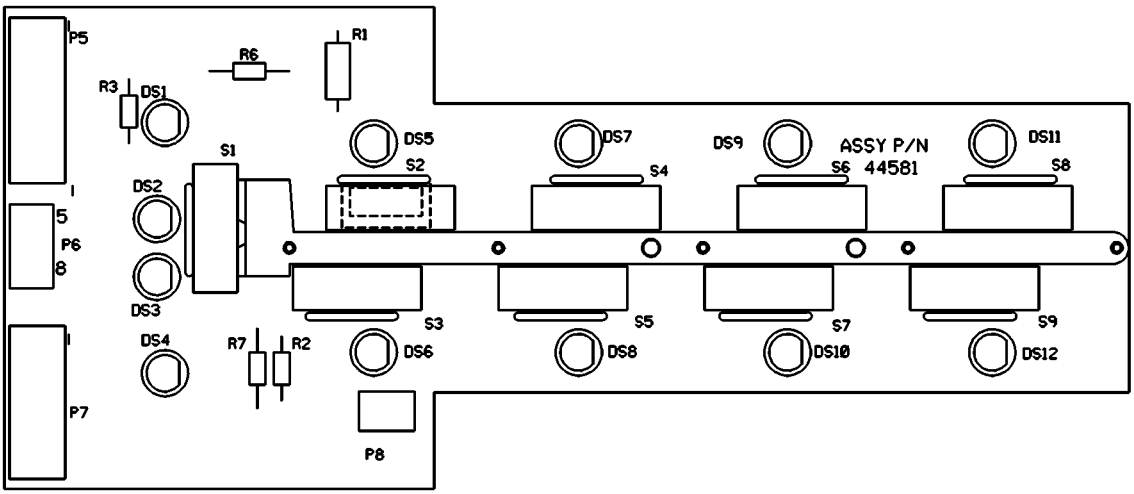
Table 5-78. Patient Control Panel—P/N 44124-01/06, P/N 44195-02/03/04/05, and P/N 44196-02/03/04/05

Component Symbol	Part Number	Description
DS1, DS4	30508 (1000)	Yellow LED
DS2, DS3, DS5 through DS12	30505 (1000)	LED—yellow
P5	30971-12 (1000)	Connector—12 pole
P6	30971-08 (1000)	Connector 8 position
P7	30971-10 (1000)	Connector—10 pole
R1	30007-8205B (1000)	Resistor
R2, R3	30016 (1000)	Resistor
S1 through S3	30817 (1000)	Switch
S4 through S9	30816 (1000)	Switch
N/A	38336 (1000)	Switch tree
N/A	38330-48 (1000)	Pin
N/A	38353-48 (1000)	Stop pin—pc

NOTE:
This is for “A” version beds **only**.

Patient Control Panel Assembly—P/N 44581 and P/N 44635-01/02/03/04/05/06/07/08/09/10/11/12

Figure 5-61. Patient Control Panel Assembly—P/N 44581 and P/N 44635-01/02/03/04/05/06/07/08/09/10/11/12



m026d181

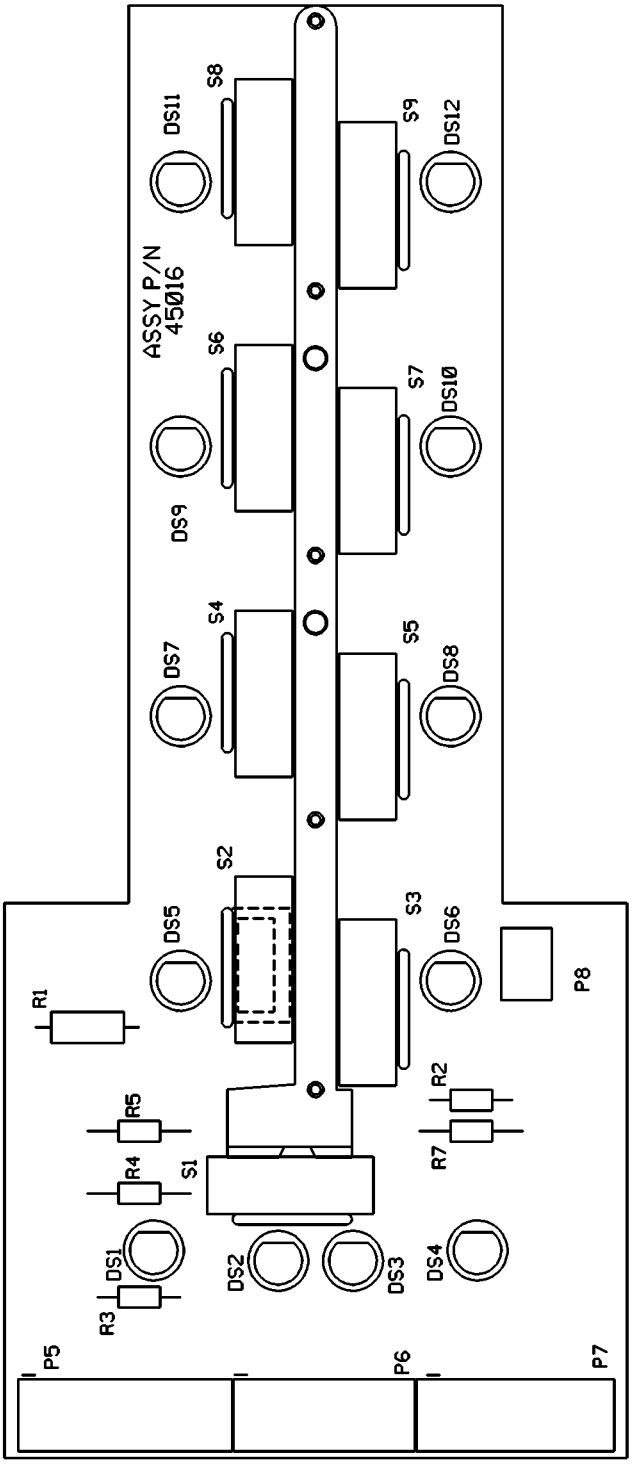
Table 5-79. Patient Control Panel Assembly—P/N 44581 and P/N 44635-01/02/03/04/05/06/07/08/09/10/11/12

Component Symbol	Part Number	Description
DS1, DS4	30508 (1000)	Yellow LED
DS2, DS3, DS5 through DS12	30505 (1000)	LED—yellow
P5	44478-12 (1000)	Connector (12 position)
P6	30971-08 (1000)	Connector (8 position)
P7	44478-10 (1000)	10 position CT connector
R1	30007-8205B (1000)	Resistor
R2, R3	30016 (1000)	Resistor
S1 through S3	30817 (1000)	Switch
S4 through S9	30816-01 (1000)	Switch
N/A	38336 (1000)	Switch tree
N/A	38330-48 (1000)	Pin
N/A	38353-48 (1000)	Stop pin

NOTE:
This is for “B” version beds **only**.

Switch P.C. Board Assembly—P/N 45016-01/02/03/04/05/06

Figure 5-62. Switch P.C. Board Assembly—P/N 45016-01/02/03/04/05/06



m026d183

Table 5-80. Switch P.C. Board Assembly—P/N 45016-01/02/03/04/05/06

Component Symbol	Part Number	Description
DS1, DS4	30508 (1000)	Yellow LED
DS2, DS3, DS5 through DS12	30505 (1000)	LED—yellow
P5	44478-12 (1000)	Connector
P6	44478-08 (1000)	Connector
P7	44478-10 (1000)	10 position CT connector
P8	44478-02 (1000)	Connector
R1	30007-8205B (1000)	Resistor
R2, R3	30016 (1000)	Resistor
S1 through S3	30817 (1000)	Switch
S4 through S9	30816-01 (1000)	Switch
N/A	38336 (1000)	Switch tree
N/A	38330-48 (1000)	Pin
N/A	38353-48 (1000)	Stop pin—pc

NOTE:
This is for “C” version beds **only**.

Interface Board—P/N 44578

Figure 5-63. Interface Board—P/N 44578

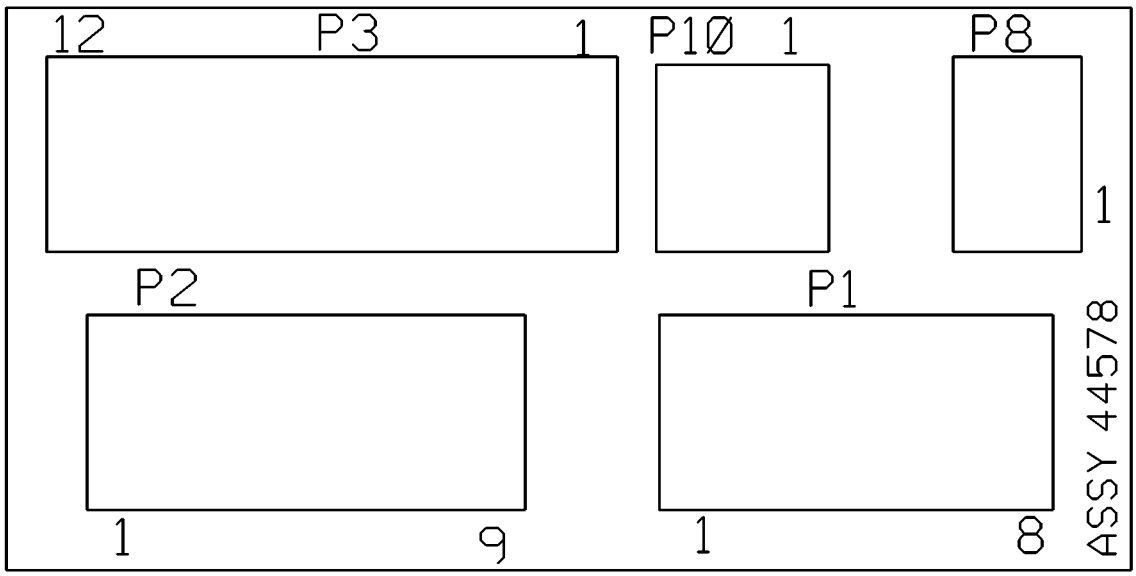


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Table 5-81. Interface Board—P/N 44578

Component Symbol	Part Number	Description
P1	44478-08 (1000)	Connector
P2	44478-09 (1000)	Connector
P3	44478-12 (1000)	Connector
P8	44478-02 (1000)	Connector
P10	44478-03 (1000)	Connector

Outer Control Panel Assembly—P/N 44668-03/04/05/06

Figure 5-64. Outer Control Panel Assembly—P/N 44668-03/04/05/06

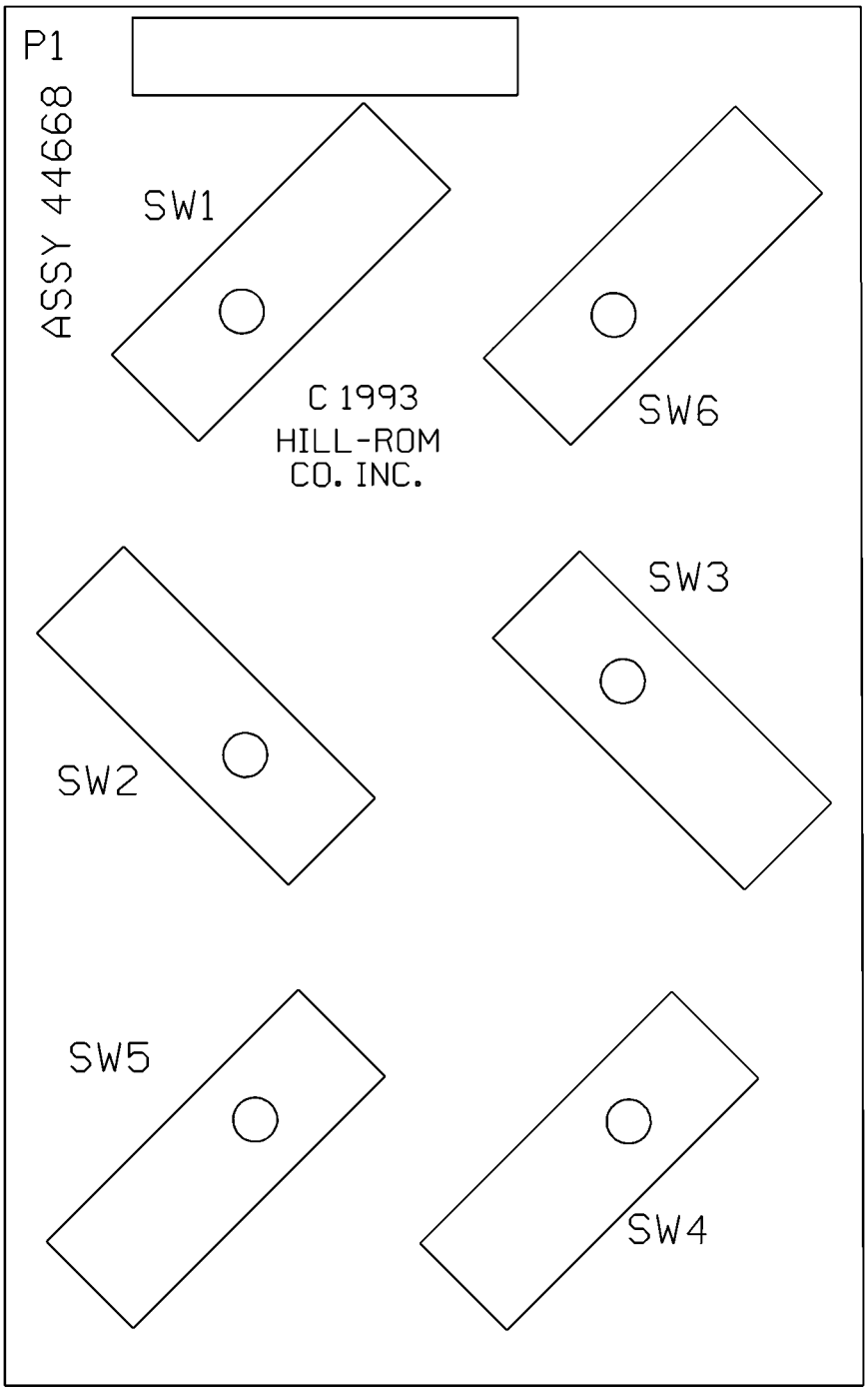

Table 5-82. Outer Control Panel Assembly—P/N 44668-03/04/05/06

Component Symbol	Part Number	Description
P1	44478-10 (1000)	10 position CT connector
SW1 through SW5	30816-01 (1000)	Switch
SW6	30817-01 (1000)	Switch norm closed

Bed Exit P.C. Board—P/N 44482-01

Figure 5-65. Bed Exit P.C. Board—P/N 44482-01

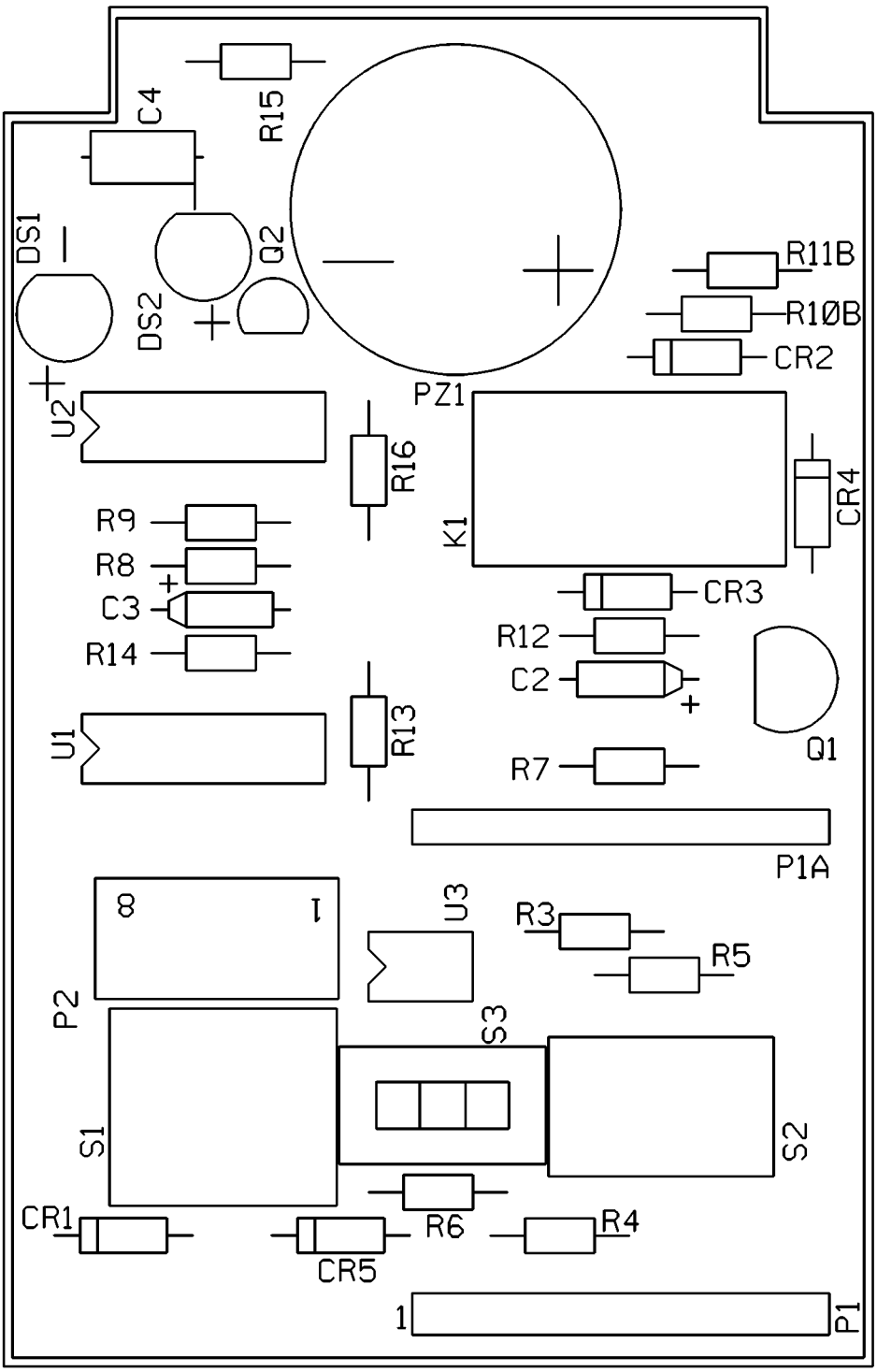

Table 5-83. Bed Exit P.C. Board—P/N 44482-01

Component Symbol	Part Number	Description
C2,C3	30144-105 (1000)	Capacitor
C4	30109-104K (1000)	Capacitor
CR1, CR2 through CR5	30201-4003B (1000)	Diode silicon
DS1, DS2	30500 (1000)	LED, red
K1	30700 (1000)	Relay
P1	44479 (1000)	Connector
P2	44478-08 (1000)	Connector
PZ1	30117 (1000)	Piezo
Q1	30300-3906A (1000)	Transistor
Q2	30300-3904A (1000)	Transistor
R3, R7, R12	30006-102 (1000)	Resistor
R4, R8	30006-105 (1000)	Resistor
R5, R6	30006-225 (1000)	Resistor
R9, R10B, R11B	30016 (1000)	Resistor
R13	30006-275 (1000)	Resistor
R14	30006-475 (1000)	Resistor
R15	30006-391 (1000)	Resistor
R16	30006-472 (1000)	Resistor
S1	30811 (1000)	Switch
S2	30812 (1000)	Switch
S3	44492 (1000)	Spit Switch
U1, U2	30400-4093B (1000)	Integrated circuit
U3	30419 (1000)	Integrated circuit

Nurse Control Flex Circuit Assembly—P/N 43154-01/02/03

Figure 5-66. Nurse Control Flex Circuit Assembly—P/N 43154-01/02/03

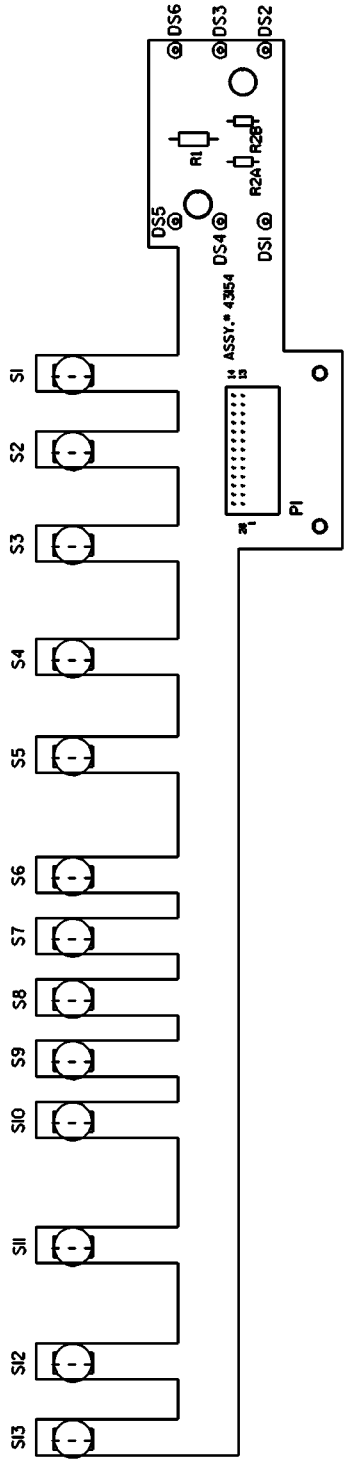

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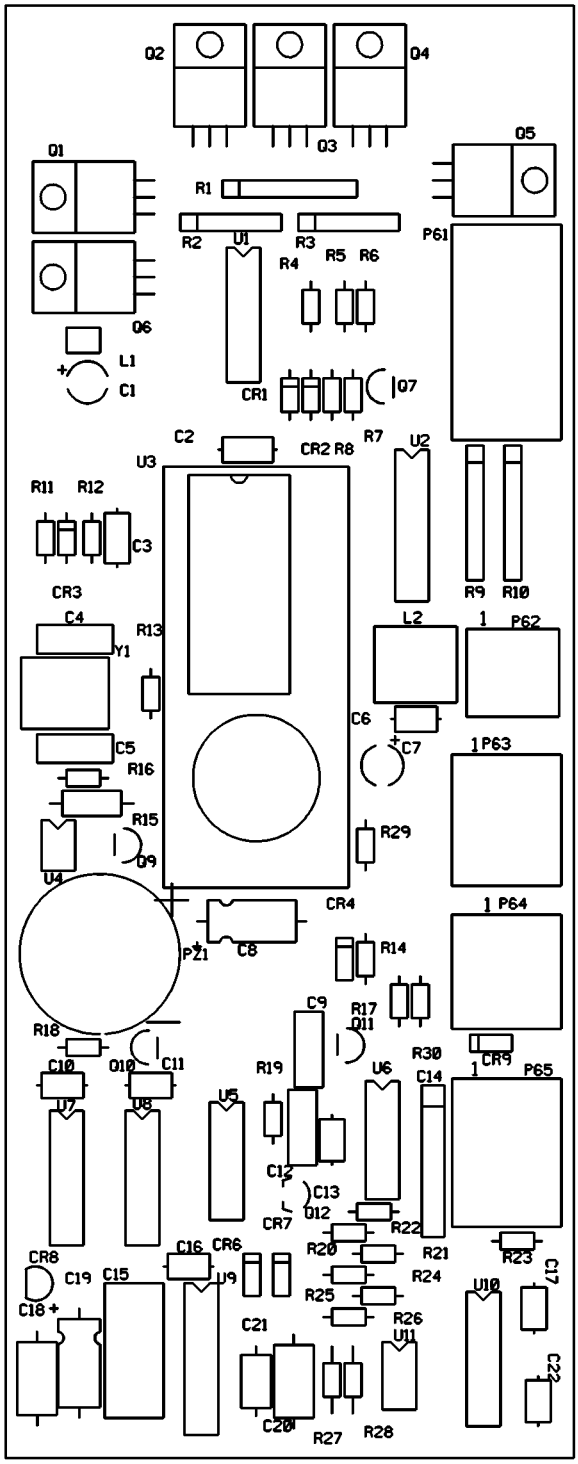
Table 5-84. Nurse Control Flex Circuit Assembly—P/N 43154-01/02/03

Component Symbol	Part Number	Description
DS1, DS2, DS4	30318 (1000)	LED yellow
DS3, DS6	30319 (1000)	LED red
DS5	30504 (1000)	LED
P1	30954-26 (1000)	Connector
R1	30007-271 (1000)	Resistor
R2A, R2B	30016 (1000)	Resistor
S1, S2, S3	30820-01 (1000)	Toggle switch—momentary
S4, S6 through S13	30819-01 (1000)	Toggle switch—on/on

Scale Micro Board Assembly—P/N 39506-01

Figure 5-67. Scale Micro Board Assembly—P/N 39506-01



m026d170

Table 5-85. Scale Micro Board Assembly—P/N 39506-01

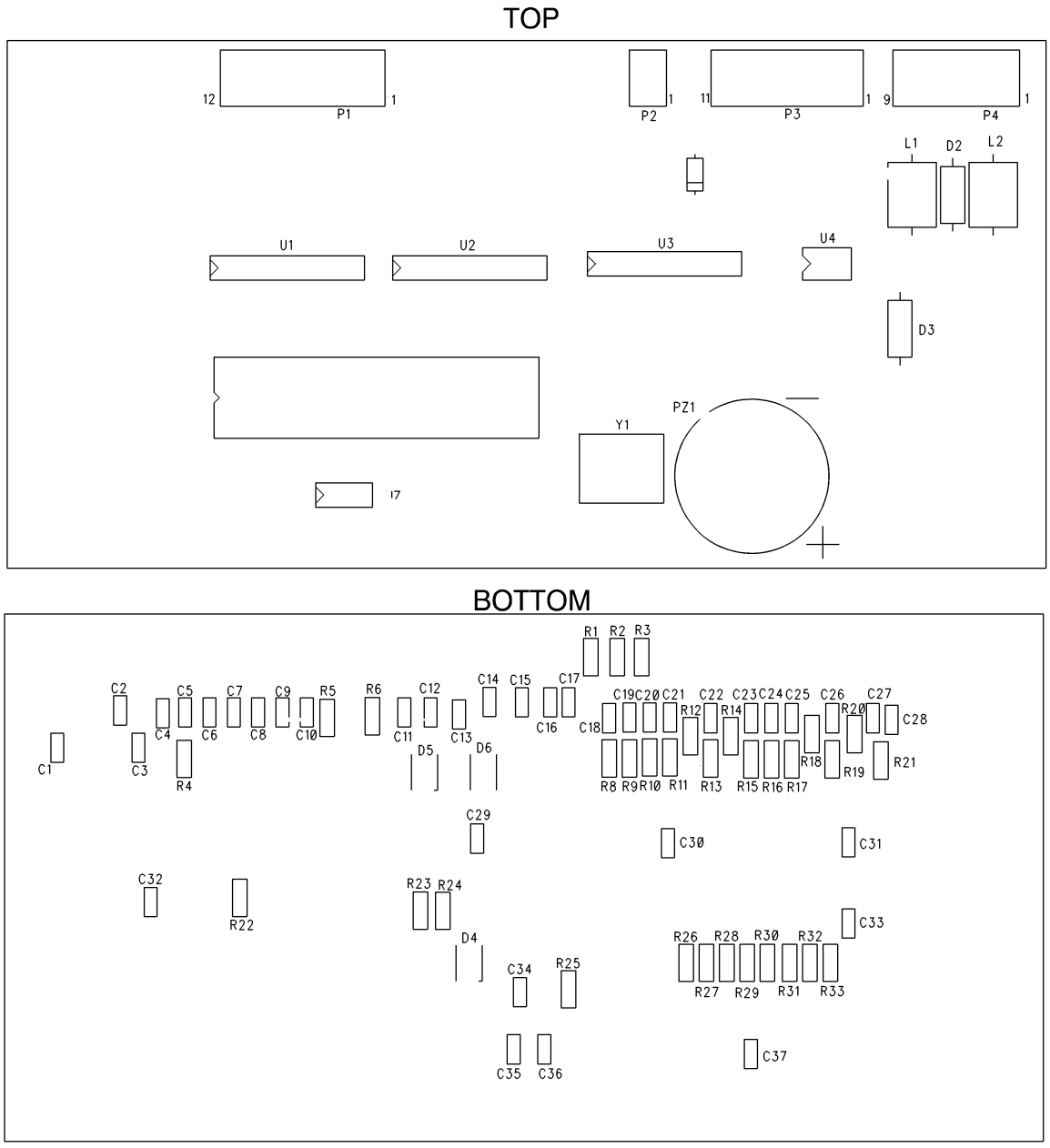
Component Symbol	Part Number	Description
C1, C7	30131-101M (1000)	Capacitor
C2, C3, C8, C23, C24	30109-104K (1000)	Capacitor
C4, C5	30128-200J (1000)	Capacitor
C6, C10, C11, C13, C16, C17, C22, C32, C33, C36, C37	30109-103K (1000)	Capacitor
C9	30128-050D (1000)	Capacitor
C12	30128-331J (1000)	Capacitor
C15	30129-105K (1000)	Capacitor
C18, C20	30132-104K (1000)	Capacitor
C19	30116 (1000)	Capacitor
C21	30130-102G (1000)	Capacitor
C34, C35	45746-475K (1000)	Capacitor
C38 through C61	45753-103 (1000)	Capacitor, ceramic
CR1 through CR3	30212-5231B (1000)	Diode
CR6, CR7, CR9	30201-4003B (1000)	Diode silicon
CR8	30211 (1000)	Integrated circuit
L1	30617 (1000)	EMI noise suppression filter
L2	30616 (1000)	EMI noise suppression filter
P61	30954-20 (1000)	Connector
P62	30957-04 (1000)	Connector
P63	30954-10 (1000)	Connector
P64	30954-08 (1000)	Connector
P65	30954-12 (1000)	Connector
PZ1	30117 (1000)	Piezo
Q1 through Q6	45702-6034 (1000)	Transistor, SIL
Q7, Q9 through Q11	30300-3904A (1000)	Transistor
Q12	30300-3906A (1000)	Resistor
R1, R17, R31	30012-103 (1000)	Resistor
R2, R3	30022-222G (1000)	Resistor network
R4, R5, R7, R12, R14, R16, R18, R21, R25, R30, R35 through R37, R41	30006-103 (1000)	Resistor
R6, R8, R11, R40, R42, R43	30006-102 (1000)	Resistor
R9, R10	30023-100F (1000)	Resistor

Component Symbol	Part Number	Description
R13	30006-106 (1000)	Resistor
R15	30007-181 (1000)	Resistor
R19	30006-333 (1000)	Resistor
R20, R22	30006-471 (1000)	Resistor
R23	30006-222 (1000)	Resistor
R24, R29	30006-472 (1000)	Resistor
R26	30006-105 (1000)	Resistor
R27	30019-2001 (1000)	Resistor
R28	30019-2003 (1000)	Resistor
R32 through R34	30006-473 (1000)	Resistor
R38	30016 (1000)	Resistor
RN1	30023-222M (1000)	Resistor, 8 pin
U1	30410-1413P (1000)	Integrated circuit
U2	30414-2803A (1000)	Integrated circuit
U3	30434 (1000)	Integrated circuit
U4	30419 (1000)	Integrated circuit
U5, U6	3040074HC14 (1000)	Integrated circuit
U7, U8	30410-74HC1 (1000)	Integrated circuit
U9	30414-1043C (1000)	Integrated circuit
U10	30410-14051 (1000)	Integrated circuit
U11	30406-1013 (1000)	Integrated circuit
U12	45704 (1000)	Integrated circuit
U13	30401-1232 (1000)	Integrated circuit
U14	39506-01 (1000)	Scale micro board assembly
Y1	30618 (1000)	Crystal

NOTES:

Scale Micro Board Assembly—P/N 61205

Figure 5-68. Scale Micro Board Assembly—P/N 61205



m026e518

Table 5-86. Scale Micro Board Assembly—P/N 61205

Component Symbol	Part Number	Description
C1, C3, C28 through C34, C37	47641104K3C (1000)	Capacitor
C2, C4 through C27, C25, C27, C28, C33	47641102 (1000)	Capacitor
C3, C26, C34, C35	47662226M1 (1000)	Capacitor
C35, C36	30450330 (1000)	Capacitor
D1	47682BAT74 (1000)	Diode, dual barrier
D2, D3	30214-180A (1000)	Diode
D4	47681050 (10000	Diode
D5, D6	4768401 (1000)	Diode
L1, L2	4757425 (1000)	Wound bead
P1	44478-12 (1000)	Connector, 12 position
P2	44478-02 (1000)	Connector, 2 position
P3	44478-11 (1000)	Connector, 11 position
P4	44478-09 (1000)	Connector, 9 position
PZ1	30117 (1000)	Piezo
R1 through R3, R12, R14, R18, R20, R25 through R33	47618103 (1000)	Resistor
R4, R6, R8, R9 through R11, R13, R15 through R17, R19, R21	47618101 (1000)	Resistor
R5	47618222 (1000)	Resistor
R22	47618181 (1000)	Resistor
R23	47618102 (1000)	Resistor
R24	47618332 (1000)	Resistor
U1 through U3	3041874HC24 (1000)	Integrated circuit
U4	30419 (1000)	Integrated circuit
U6	6201301 (1000)	Integrated circuit
U7	3041-1232 (1000)	Integrated circuit
Y1	30618 (1000)	Crystal

Scale Display Assembly—P/N 39452

Figure 5-69. Scale Display Assembly—P/N 39452

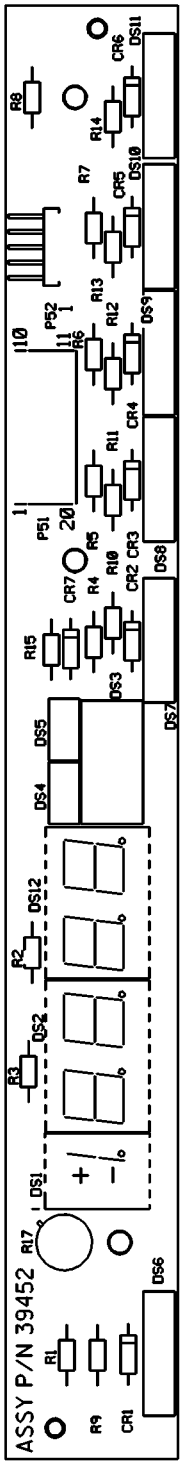


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Table 5-87. Scale Display Assembly—P/N 39452

Component Symbol	Part Number	Description
CR1 through CR7	30201-4003B (1000)	Diode silicon
DS1	44039-01 (1000)	Display
DS2, DS12	44038-01 (1000)	Display
DS3	30511-03 (1000)	Display
DS4, DS5	30513-03 (1000)	Display
DS6 through DS11	30512-04 (1000)	Display
P51	30994 (1000)	Connector
P52	30993-05 (1000)	Connector
R1 through R8	30006-1515B (1000)	Resistor
R9 through R15	30006-5615B (1000)	Resistor
R17	30025 (1000)	Photo-resistor

Scale Display Assembly—P/N 49584

Figure 5-70. Scale Display Assembly—P/N 49584

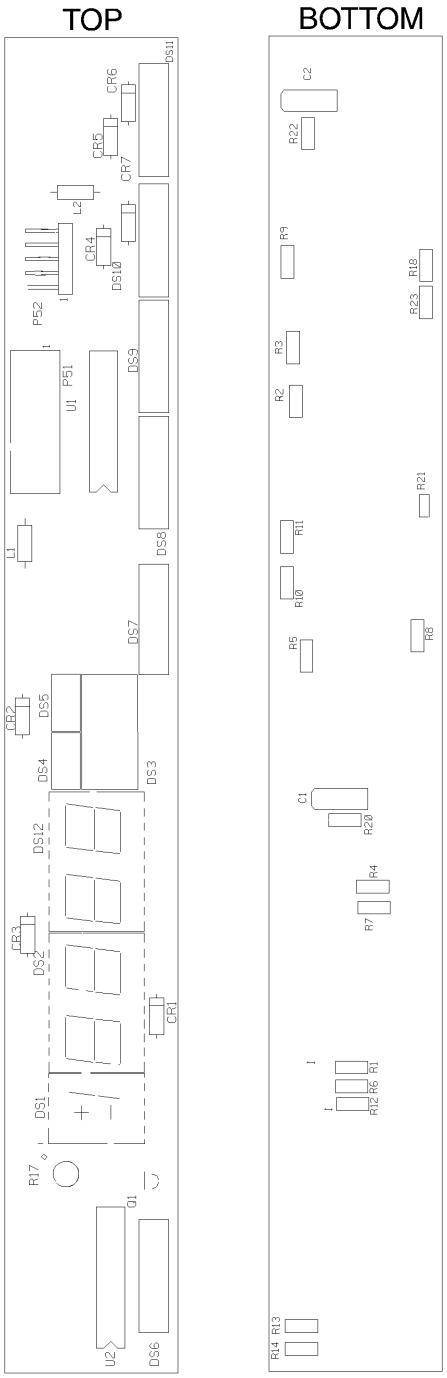

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Table 5-88. Scale Display Assembly—P/N 49584

Component Symbol	Part Number	Description
C1, C2	47662226M1 (1000)	Capacitor
CR1 through CR6	30201-4003B (1000)	Diode silicon
CR7	30006-100 (10000	Resistor
DS1	4403902 (1000)	Display
DS2, DS12	44038-02 (1000)	Display
DS3	30511-03 (1000)	Display (green)
DS4, DS5	30513-03 (1000)	Display (green)
DS6 through DS11	30512-04 (1000)	Display (yellow)
L1, L2	30617 (1000)	Filter
P51	44478-12 (1000)	Connector, 12 position
P52	30993-05 (1000)	Connector
Q1	30300-3904A (1000)	Transistor
R1 through R8	47618151 (1000)	Resistor
R9 through R14	47618331 (1000)	Resistor
R17	30025 (1000)	Photo-resistor
R18	47618103 (1000)	Resistor
R20, R22	47618751 (1000)	Resistor
R21	47619100 (1000)	Resistor
R23	47618000 (1000)	Resistor
U1, U2	62015 (1000)	Integrated circuit

Analog Board Assembly—P/N 39369-01

Figure 5-71. Analog Board Assembly—P/N 39369-01

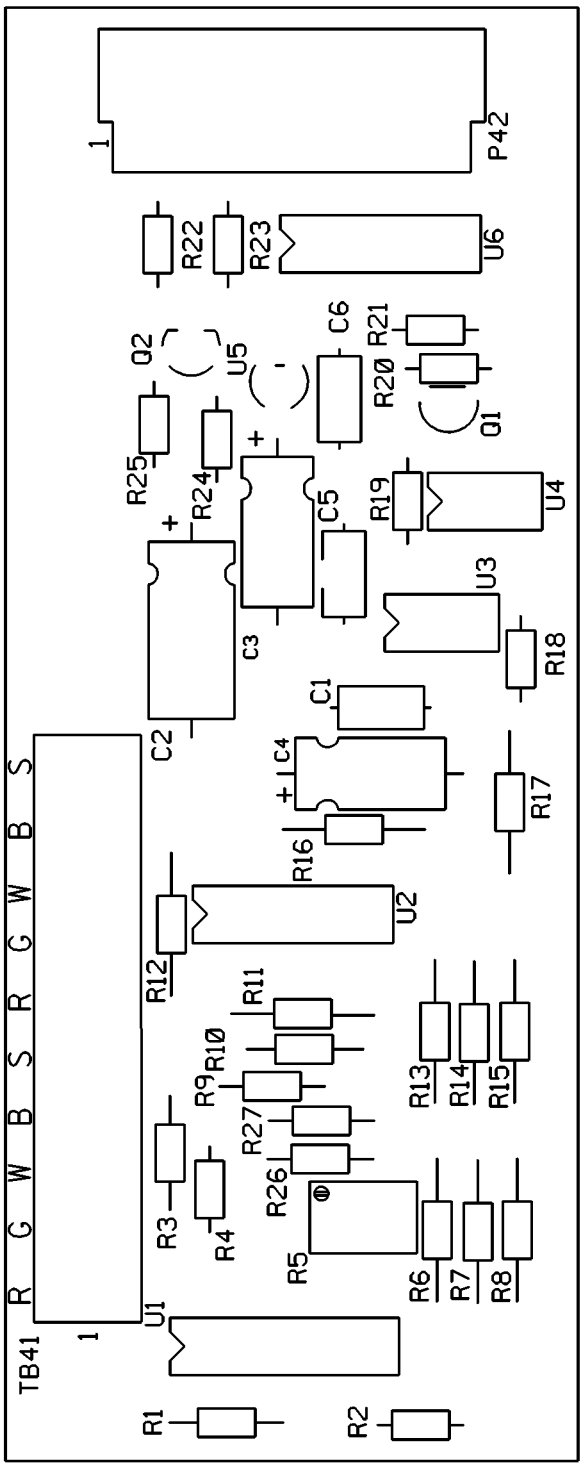

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Table 5-89. Analog Board Assembly—P/N 39369-01

Component Symbol	Part Number	Description
C1, C5, C6	30109-104K (1000)	Capacitor
C2	30108 (1000)	Capacitor
C3, C4	30116 (1000)	Capacitor
P42	30957-12 (1000)	Connector
Q1	30300-3904A (1000)	Transistor
Q2	30300-3906A (1000)	Transistor
R1, R3	30016 (1000)	Resistor
R2, R4, R21 through R23	30006-103 (1000)	Resistor
R5	30056-501 (1000)	Potentiometer
R6, R9 through R11, R14, R16	30019-1003B (1000)	Resistor
R7, R8	30019-1372B (1000)	Resistor
R12	30019-1002B (1000)	Resistor
R13, R15	30019-5111B (1000)	Resistor
R17	30019-3012B (1000)	Resistor
R18	30006-102 (1000)	Resistor
R19, R20	30006-472 (1000)	Resistor
R24, R25	30020-1501B (1000)	Resistor
TB41	30990-10 (1000)	Terminal block
U1	30410-14052 (1000)	Integrated circuit
U2	30402-660C (1000)	Transformer
U3	30401-7660 (1000)	Integrated circuit
U4	30412-X2402 (1000)	Integrated circuit
U5	30312-2931 (1000)	Integrated circuit
U6	3040074HC14 (1000)	Integrated circuit

Analog Board Assembly—P/N 49751

Figure 5-72. Analog Board Assembly—P/N 49751

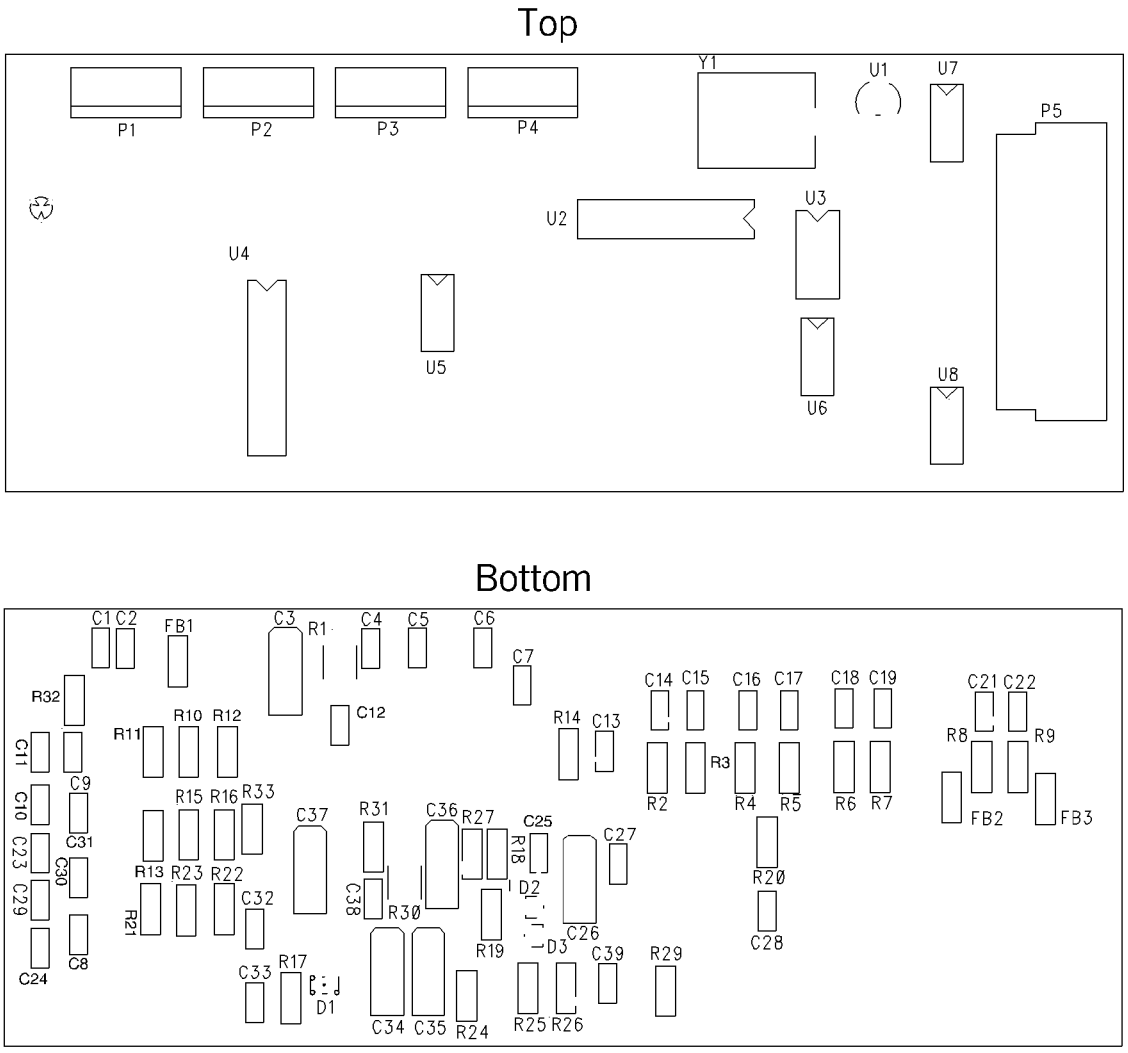

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Table 5-90. Analog Board Assembly—P/N 49751

Component Symbol	Part Number	Description
C1, C6, C7, C13 through C19, C21, C22	47641103 (1000)	Capacitor
C2, C12, C25, C27, C28, C33, C38, C39	47641104K3C (1000)	Capacitor
C3, C26, C34 through C37	47662226M1 (1000)	Capacitor
C4, C5	47641180K3C (1000)	Capacitor
C8 through C11, C23, C24, C29 through C31	47641102 (1000)	Capacitor
C32	47641222 (1000)	Capacitor
D1	47682BAT74 (1000)	Diode, dual barrier
D2, D3	47680 (1000)	Diode, signal
FB1 through FB3	3068301 (1000)	Ferrite bead
P1 through P4	4841905 (1000)	Connector, 5 position
P5	3095712 (1000)	Connector, 12 position
R1, R30	47619101 (1000)	Resistor
R2 through R13, R15, R16, R21 through R23	47618101 (1000)	Resistor
R14	47618222 (1000)	Resistor
R17	47618332 (1000)	Resistor
R18	47618100 (1000)	Resistor
R19, R32, R33	47618000 (1000)	Resistor
R20	47618331 (1000)	Resistor
R24, R29	47618102 (1000)	Resistor
R25, R26, R31	47618103 (1000)	Resistor
R27	47618183 (1000)	Resistor
U1	303122931 (1000)	Integrated circuit
U2	3068401(1000)	Transformer
U3	30412X2401 (1000)	Integrated circuit
U4	3041014052B(1000)	Integrated circuit
U5	3068501 (1000)	Integrated circuit
U6	3068601 (1000)	Integrated circuit
U7, U8	304016000 (1000)	Integrated circuit
Y1	3083201 (1000)	Crystal

Connectors and Terminals—P.C. Boards

Table 5-91. High Voltage Power Control Board Assembly—P/N 42822-01/02/03

Board Location	Board Connector	Mating Connector	Terminal
P1	42835-05 (1000)	30966 (1000)	30950 (1000)
P2	42836-06 (1000)	43331-06 (1000)	30950 (1000)
P3	42836-09 (1000)	40011 (1000)	30950 (1000)
P4	43145-04 (1000)	43286-04 (1000)	30951 (1000)
P5	43145-05 (1000)	43145-05 (1000)	30951 (1000)
P6	43145-04 (1000)	43286-04 (1000)	30951 (1000)
P7	42837-18 (1000)	None	None
P8	30932 (1000)	None	None
P9	30995-04A (1000)	30910-04 (1000)	29975 (1000)
P10	43231-18 (1000)	43289-18 (1000)	43287 (1000)

Table 5-92. Logic Control Board Assembly—P/N 44158-01/03/05

Board Location	Board Connector	Mating Connector	Terminal
P14	44155 (1000)	None	None
P15	43231-06 (1000)	43289-03 (1000)	34307 (1000)
P19	43231-16 (1000)	43289-16 (1000)	34307 (1000)
P23	43231-07 (1000)	43289-07 (1000)	43287 (1000)
P32	43231-20 (1000)	43289-20 (1000)	43287 (1000)
P33	43231-05 (1000)	43289-05 (1000)	43287 (1000)
P34	43231-10 (1000)	None	None
P35	43231-15 (1000)	43289-15 (1000)	43287 (1000)
P105	43231-06 (1000)	43289-06 (1000)	43287 (1000)

Table 5-93. Logic Control Board Assembly—P/N 61410-02 and 6141002

Board Location	Board Connector	Mating Connector	Terminal
P14	44155 (1000)	None	None
P15	43231-06 (1000)	43289-03 (1000)	34307 (1000)
P19	43231-16 (1000)	43289-16 (1000)	34307 (1000)
P23	43231-07 (1000)	43289-07 (1000)	43287 (1000)
P32	43231-20 (1000)	43289-20 (1000)	43287 (1000)
P33	30959-06 (1000)	43289-05 (1000)	43287 (1000)
P34	43231-10 (1000)	None	None
P35A	4447806 (1000)	—	—
P35B	44478-08 (1000)	—	—
P35C	4447807 (1000)	—	—
P105	43231-06 (1000)	43289-06 (1000)	43287 (1000)

Table 5-94. Night Light Board Assembly—P/N 43200-01/02

Board Location	Board Connector	Mating Connector	Terminal
P12	42835-05 (1000)	30966 (1000)	30950 (1000)
P13	30995-02 (1000)	30910-02 (1000)	29975 (1000)
P14	30995-03A (1000)	30910-03 (1000)	29975 (1000)
P30	30956-05 (1000)	30955-05 (1000)	30952 (1000)

Table 5-95. Night Light Board Assembly without Scale—P/N 48921

Board Location	Board Connector	Mating Connector	Terminal
P12	30995-04A (1000)	30910-04 (1000)	29975 (1000)
P13	30995-02 (1000)	30910-02 (1000)	29975 (1000)
P14	30995-03A (1000)	30910-03 (1000)	29975 (1000)

Table 5-96. DynamicAire Sleep Surface Air Control P.C. Board Assembly—P/N 44047

Board Location	Board Connector	Mating Connector	Terminal
P26	30956-05 (1000)	30955-05 (1000)	30952 (1000)
P27	30934 (1000)	30955-08 (1000)	30979 (1000)
P28	30925 (1000)	43286-04 (1000)	30951 (1000) Qty (2) 30951-01 (1000) Qty (1)
P29	30921 (1000)	30924 (1000)	30950 (1000)

Table 5-97. ZoneAire Sleep Surface Power Supply Board Assembly—P/N 44719-01/02/03

Board Location	Board Connector	Mating Connector	Terminal
P100	43145-04 (1000)	43286-04 (1000)	30951 (1000) Qty (2) 30951-01 (1000) Qty (1)
P101	42835-02 (1000)	40012 (1000)	30950 (1000)
P102	44713-09 (1000)	44811-01 (1000)	None
P103	44713-09 (1000)	45010-43 (1000)	None

Table 5-98. ZoneAire Sleep Surface Air Control P.C. Board—P/N 45944-03, 44760-01 and 4476002

Board Location	Board Connector	Mating Connector	Terminal
P110	None	43286-04 (1000)	30951 (1000)
P111	None	30998-07 (1000)	None
P112	None	45010-43 (1000)	None
P113	None	None	None
P114	None	45574 (1000)	None
P115	None	30998-03 (1000)	None
P116	None	None	None
P117	None	None	None
P118	None	None	None

Table 5-99. ZoneAire Sleep Surface P.C. Board Assembly, Membrane Interface—P/N 44805

Board Location	Board Connector	Mating Connector	Terminal
P1	44478-03 (1000)	45639-04 (1000)	None
P2	44478-12 (1000)	44810-02 (1000)	None
P3	44478-11 (1000)	45639-11 (1000)	None
P4	44478-14 (1000)	45639-14 (1000)	None
P5	4447813 (1000)	45639-13 (1000)	None
P6	44478-02 (1000)	44808-01 (1000)	None

Table 5-100. ZoneAire Sleep Surface P.C. Board Assembly, Membrane Interface—P/N 62738

Board Location	Board Connector	Mating Connector	Terminal
P1	44478-03 (1000)	4585003 (1000)	None
P2A	44478-12 (1000)	4585012 (1000)	None
P2B	4447815 (1000)	45850-15 (1000)	None
P3	44478-11 (1000)	4585011 (1000)	None
P4	44478-14 (1000)	45850-14 (1000)	None
P5	4447813 (1000)	4585013 (1000)	None
P6	44478-02 (1000)	4585002 (1000)	None

Table 5-101. ZoneAire Sleep Surface LED Board Assembly—P/N 44732

Board Location	Board Connector	Mating Connector	Terminal
P1	44478-14 (1000)	45639-14 (1000)	None

Table 5-102. Junction Box Assembly—P/N 44647

Board Location	Board Connector	Mating Connector	Terminal
J1	38346 (1000)	44186-01 (1000) or 44187-01 (1000)	None
J2	38346 (1000)	44186-01 (1000) or 44187-01 (1000)	None
J4	28665 (1000)	Hospital nurse call pendant	None
P3	38345 (1000)	379A-11C (1000)	None

Table 5-103. Junction Box Assembly—P/N 44647

Board Location	Board Connector	Mating Connector	Terminal
J1	38346 (1000)	44554-01 (1000) or 44555-01 (1000)	None
J2	38346 (1000)	44554-02 (1000) or 44555-02 (1000)	None
J4	28665 (1000)	Hospital nurse call pendant	None
P3	38345 (1000)	P379 (1000)	None

Table 5-104. Junction Box P.C. Board—P/N 45588-02

Board Location	Board Connector	Mating Connector	Terminal
J1	38346 (1000)	44554-01 (1000) or 44555-01 (1000)	None
J2	38346 (1000)	44554-02 (1000) or 44555-02 (1000)	None
J4	28665 (1000)	Hospital nurse call pendant	None
P3	38345 (1000)	P379 (1000)	None

Table 5-105. Patient Control Panel—P/N 44124-01/06, P/N 44195-02/03/04/05, and P/N 44196-02/03/04/05

Board Location	Board Connector	Mating Connector	Terminal
P5	30971-12 (1000)	30972-12 (1000)	30979 (1000)
P6	30971-08 (1000)	30972-08 (1000)	30979 (1000)
P7	30971-10 (1000)	30972-10 (1000)	30979 (1000) Quantity (6) 22153 (1000) Quantity (4)

Table 5-106. Patient Control Panel Assembly—P/N 44581 and P/N 44635-01/02/03/04/05/06/07/08/09/10/11/12

Board Location	Board Connector	Mating Connector	Terminal
P5	44478-12 (1000)	LH—44554-01 (1000) RH—44554-02 (1000)	None
P6	30971-08 (1000)	30972-08 (1000)	30979 (1000)
P7	44478-11 (1000)	LH—44555-01 (1000) RH—44555-02 (1000)	None
P8	44478-02 (1000)	44590 (1000)	None

Table 5-107. Switch P.C. Board Assembly—P/N 45016-01/02/03/04/05/06

Board Location	Board Connector	Mating Connector	Terminal
P5	44478-12 (1000)	LH—44554-01 (1000) RH—44554-02 (1000)	None
P6	44478-10 (1000)	LH—44553-01 (1000) RH—44553-02 (1000)	None
P7	44478-11 (1000)	LH—44555-01 (1000) RH—44555-02 (1000)	None
P8	44478-02 (1000)	44590 (1000)	None

Table 5-108. Interface Board—P/N 44578

Board Location	Board Connector	Mating Connector	Terminal
P1	44478-08 (1000)	LH—44551 (1000) RH—None	None
P2	44478-09 (1000)	44552 (1000)	None
P3	44478-12 (1000)	LH—44555-01 (1000) RH—44555-02 (1000)	None
P8	44478-02 (1000)	44590 (1000)	None
P10	44478-03 (1000)	LH—44554-01 (1000) RH—44554-02 (1000)	None

Table 5-109. Outer Control Panel Assembly—P/N 44668-03/04/05/06

Board Location	Board Connector	Mating Connector	Terminal
P1	44478-10 (1000)	LH—44553-01 (1000) RH—44553-02 (1000)	None

Table 5-110. Bed Exit P.C. Board—P/N 44482-01

Board Location	Board Connector	Mating Connector	Terminal
P1	44479 (1000)	None	None
P2	44478-08 (1000)	44551 (1000)	None

Table 5-111. Nurse Control Flex Circuit Assembly—P/N 43154-01/02/03

Board Location	Board Connector	Mating Connector	Terminal
P1	30954-26 (1000)	41383 (1000)	None

Table 5-112. Scale Micro Board Assembly—P/N 39506-01

Board Location	Board Connector	Mating Connector	Terminal
P61	30954-20 (1000)	39452 (1000)	None
P62	30957-04 (1000)	30955-04 (1000)	30952 (1000)
P63	30954-10 (1000)	30972-10 (1000)	30952 (1000)
P64	30954-08 (1000)	30972-08 (1000)	30952 (1000)
P65	30954-12 (1000)	30972-12 (1000)	30952 (1000)

Table 5-113. Scale Micro Board Assembly—P/N 61205

Board Location	Board Connector	Mating Connector	Terminal
P1	44478-12 (1000)	4585012 (1000)	None
P2	44478-02 (1000)	4585002 (1000)	None
P3	44478-11 (1000)	4585011 (1000)	None
P4	44478-09 (1000)	4585009 (1000)	None

Table 5-114. Scale Display Assembly—P/N 39452

Board Location	Board Connector	Mating Connector	Terminal
P51	30994 (1000)	39506-01 (1000)	None
P52	30993-05 (1000)	40208 (1000)	None

Table 5-115. Scale Display Assembly—P/N 49584

Board Location	Board Connector	Mating Connector	Terminal
P51	44478-12 (1000)	4585012 (1000)	None
P52	30993-05 (1000)	40208 (1000)	None

Table 5-116. Analog Board Assembly—P/N 39369-01

Board Location	Board Connector	Mating Connector	Terminal
P42	30957-12 (1000)	30955-12 (1000)	30952 (1000)

Table 5-117. Analog Board Assembly—P/N 49584

Board Location	Board Connector	Mating Connector	Terminal
P1	4841905 (1000)	not available	None
P2	4841905 (1000)	not available	None
P5	30957-12 (1000)	30955-12 (1000)	30952

Connectors and Terminals—Motors and Limits

Table 5-118. Motors

Function	Motor Harness		Motor Assembly	
	Connector P/N	Terminal P/N	Connector P/N	Terminal P/N
Head	43145-05 (1000)	None	43145-05 (1000)	30951 (1000)
Knee	43294-04 (1000)	30950 (1000)	43286-04 (1000)	30951 (1000)
Hilow	43145-04 (1000) Quantity (2)	None	43286-04 (1000)	30951 (1000)

Table 5-119. Limits

Function	Limit Harness		Limit Assembly	
	Connector P/N	Terminal P/N	Connector P/N	Terminal P/N
Head	28518 (1000)	43929 (1000)	28519 (1000)	43930 (1000)
Foot	30948 (1000)	43929 (1000)	30949 (1000)	43930 (1000)
Hilow—head	30948 (1000)	43929 (1000)	30949 (1000)	43930 (1000)
Hilow—foot	30929 (1000)	43929 (1000)	30930 (1000)	43930 (1000)

Siderail Assembly Complete

Table 5-120. Siderail Assemblies Complete—"A" Version Only

Siderail Option	Left Hand		Right Hand	
	With Air	Without Air	With Air	Without Air
53	43709-03 (1000)	43709-11 (1000)	43708-03 (1000)	43708-11 (1000)
54	43709-04 (1000)	43709-12 (1000)	43708-04 (1000)	43708-12 (1000)
55	43709-05 (1000)	43709-13 (1000)	43708-03 (1000)	43708-11 (1000)
56	43709-06 (1000)	43709-14 (1000)	43708-06 (1000)	43708-14 (1000)
59	43709-09 (1000)	43709-15 (1000)	43708-06 (1000)	43708-15 (1000)

Table 5-121. Siderail Assemblies Complete—"B" Version Only

Siderail Option	Left Hand		Right Hand	
	With Air	Without Air	With Air	Without Air
52	44642-21 (1000)	44642-23 (1000)	44642-18 (1000)	44642-20 (1000)
53	44642-01 (1000)	44642-11 (1000)	44642-02 (1000)	44642-10 (1000)
54	44642-03 (1000)	44642-13 (1000)	44642-04 (1000)	44642-12 (1000)
55	44642-05 (1000)	44642-15 (1000)	44642-02 (1000)	44642-10 (1000)
56	44642-07 (1000)	44642-17 (1000)	44642-06 (1000)	44642-14 (1000)
59	44642-09 (1000)	44642-19 (1000)	44642-08 (1000)	44642-16(1000)

Table 5-122. Siderail Assemblies Complete—"C" Version Only

Siderail Option	Left Hand		Right Hand	
	With Air	Without Air	With Air	Without Air
52	45079-21-48 (1000)	45079-23-48 (1000)	45079-18-48 (1000)	45079-20-48 (1000)
53	45079-01-48 (1000)	45079-11-48 (1000)	45079-02-48 (1000)	45079-10-48 (1000)
54	45079-03-48 (1000)	45079-13-48 (1000)	45079-04-48 (1000)	45079-12-48 (1000)
55	45079-05-48 (1000)	45079-15-48 (1000)	45079-02-48 (1000)	45079-10-48 (1000)
56	45079-07-48 (1000)	45079-17-48 (1000)	45079-06-48 (1000)	45079-14-48 (1000)
59	45079-09-48 (1000)	45079-19-48 (1000)	45079-08-48 (1000)	45079-16-48 (1000)

Table 5-123. Siderail Assemblies Complete—"E" and "F" Version Beds

Siderail Option	Left Hand		Right Hand	
	With Air	Without Air	With Air	Without Air
52	616352148 (1000)	616352348 (1000)	616350448 (1000)	616351248 (1000)
53	616350148 (1000)	616351148 (1000)	616350248 (1000)	616351048 (1000)
54	616350348(1000)	616351348 (1000)	616350448 (1000)	616351248 (1000)
55	616350548 (1000)	616351548 (1000)	616350248 (1000)	616351048 (1000)
56	616350748 (1000)	616351748 (1000)	616350648 (1000)	616351448 (1000)
59	616350948 (1000)	616351948 (1000)	616350848 (1000)	616351648 (1000)

Patient Control Unit and Communication Module

Table 5-124. Patient Control Unit and Communication Module—"A" Version Beds With Air Only

Siderail Option	Patient Control Assembly Complete		Patient Control Overlay	
	Right-Hand	Left-Hand	Right-Hand	Left-Hand
53	44195-01 (1000)	44196-01 (1000)	38354-01 (1000)	38393-01 (1000)
54	44195-02 (1000)	44196-02 (1000)	38354-02 (1000)	38393-02 (1000)
55	44195-01 (1000)	44196-01 (1000)	38354-01 (1000)	38393-01 (1000)
56	44195-02 (1000)	44196-02 (1000)	38354-02 (1000)	38393-02 (1000)
59	44195-03 (1000)	44196-03 (1000)	38354-03 (1000)	38393-03 (1000)

Siderail Option	Switchboard Assembly	Communication Housing Assembly	
	Right-Hand and Left-Hand	Right-Hand	Left-Hand
53	See "Patient Control Assembly Complete."	42948 (1000)	42948 (1000)
54	See "Patient Control Assembly Complete."	42948 (1000)	44190 (1000)
55	See "Patient Control Assembly Complete."	42948 (1000)	44190 (1000)
56	See "Patient Control Assembly Complete."	34454-48 (1000)	44189 (1000)
59	See "Patient Control Assembly Complete."	34454-48 (1000)	34454-48 (1000)

Table 5-125. Patient Control Unit and Communication Module— "A" Version Beds Without Air Only

Siderail Option	Patient Control Assembly Complete		Patient Control Overlay	
	Right-Hand	Left-Hand	Right-Hand	Left-Hand
53	44195-04 (1000)	44196-04 (1000)	38354-04 (1000)	38393-04 (1000)
54	44195-05 (1000)	44196-05 (1000)	38354-05 (1000)	38393-05 (1000)
55	44195-04 (1000)	44196-04 (1000)	38354-04 (1000)	38393-04 (1000)
56	44195-05 (1000)	44196-05 (1000)	38354-05 (1000)	38393-05 (1000)
59	44195-06 (1000)	44196-06 (1000)	38354-06 (1000)	38393-06 (1000)

Siderail Option	Switchboard Assembly	Communication Housing Assembly	
	Right-Hand and Left-Hand	Right-Hand	Left-Hand
53	See "Patient Control Assembly Complete."	42948 (1000)	42948 (1000)
54	See "Patient Control Assembly Complete."	42948 (1000)	44190 (1000)
55	See "Patient Control Assembly Complete."	42948 (1000)	44190 (1000)
56	See "Patient Control Assembly Complete."	34454-48 (1000)	44189 (1000)
59	See "Patient Control Assembly Complete."	34454-48 (1000)	34454-48 (1000)

Table 5-126. Patient Control Unit and Communication Module— "B" Version Beds With Air Only

Siderail Option	Patient Control Assembly Complete		Patient Control Overlay	
	Right-Hand	Left-Hand	Right-Hand	Left-Hand
52	44635-04 (1000)	44635-03 (1000)	38354-02 (1000)	38393-02 (1000)
53	44635-02 (1000)	44635-01 (1000)	38354-01 (1000)	38393-01 (1000)
54	44635-04 (1000)	44635-03 (1000)	38354-02 (1000)	38393-02 (1000)
55	44635-02 (1000)	44635-01 (1000)	38354-01 (1000)	38393-01 (1000)
56	44635-04 (1000)	44635-03 (1000)	38354-02 (1000)	38393-02 (1000)
59	44635-06 (1000)	44635-05 (1000)	38354-03 (1000)	38393-03 (1000)

Siderail Option	Switchboard Assembly	Communication Housing Assembly	
	Right-Hand and Left-Hand	Right-Hand	Left-Hand
52	See "Patient Control Assembly Complete."	44632-02-48 (1000)	44632-02-48 (1000)
53	See "Patient Control Assembly Complete."	44632-02-48 (1000)	44632-07-48 (1000)
54	See "Patient Control Assembly Complete."	44632-02-48 (1000)	44632-01-48 (1000)
55	See "Patient Control Assembly Complete."	44632-02-48 (1000)	44632-01-48 (1000)
56	See "Patient Control Assembly Complete."	34454-48 (1000)	44632-03-48 (1000)
59	See "Patient Control Assembly Complete."	34454-48 (1000)	34454-48 (1000)

Table 5-127. Patient Control Unit and Communication Module— "B" Version Beds Without Air Only

Siderail Option	Patient Control Assembly Complete		Patient Control Overlay	
	Right-Hand	Left-Hand	Right-Hand	Left-Hand
52	44635-10 (1000)	44635-09 (1000)	38354-05 (1000)	38393-05 (1000)
53	44635-08 (1000)	44635-07 (1000)	38354-04 (1000)	38393-04 (1000)
54	44635-10 (1000)	44635-09 (1000)	38354-05 (1000)	38393-05 (1000)
55	44635-08 (1000)	44635-07 (1000)	38354-04 (1000)	38393-04 (1000)
56	44635-10 (1000)	44635-09 (1000)	38354-05 (1000)	38393-05 (1000)
59	44635-12 (1000)	44635-11 (1000)	38354-06 (1000)	38393-06 (1000)

Siderail Option	Switchboard Assembly	Communication Housing Assembly	
	Right-Hand and Left-Hand	Right-Hand	Left-Hand
52	See "Patient Control Assembly Complete."	44632-02-48 (1000)	44632-02-48 (1000)
53	See "Patient Control Assembly Complete."	44632-02-48 (1000)	44632-07-48 (1000)
54	See "Patient Control Assembly Complete."	44632-02-48 (1000)	44632-01-48 (1000)
55	See "Patient Control Assembly Complete."	44632-02-48 (1000)	44632-01-48 (1000)
56	See "Patient Control Assembly Complete."	34454-48 (1000)	44632-03-48 (1000)
59	See "Patient Control Assembly Complete."	34454-48 (1000)	34454-48 (1000)

Table 5-128. Patient Control Unit and Communication Module—"C" Version Beds With Air Only

Siderail Option	Patient Control Assembly Complete		Patient Control Overlay	
	Right-Hand	Left-Hand	Right-Hand	Left-Hand
52	45078-04 (1000)	45078-03 (1000)	38354-02 (1000)	38393-02 (1000)
53	45078-02 (1000)	45078-01 (1000)	38354-01 (1000)	38393-01 (1000)
54	45078-04 (1000)	45078-03 (1000)	38354-02 (1000)	38393-02 (1000)
55	45078-02 (1000)	45078-01 (1000)	38354-01 (1000)	38393-01 (1000)
56	45078-04 (1000)	45078-03 (1000)	38354-02 (1000)	38393-02 (1000)
59	45078-06 (1000)	45078-05 (1000)	38354-03 (1000)	38393-03 (1000)

Siderail Option	Switchboard Assembly	Communication Housing Assembly	
	Right-Hand and Left-Hand	Right-Hand	Left-Hand
52	See "Patient Control Assembly Complete."	44632-02-48 (1000)	44632-02-48 (1000)
53	See "Patient Control Assembly Complete."	44632-02-48 (1000)	44632-02-48 (1000)
54	See "Patient Control Assembly Complete."	44632-02-48 (1000)	44632-01-48 (1000)
55	See "Patient Control Assembly Complete."	44632-02-48 (1000)	44632-01-48 (1000)
56	See "Patient Control Assembly Complete."	34454-48 (1000)	44632-03-48 (1000)
59	See "Patient Control Assembly Complete."	34454-48 (1000)	34454-48 (1000)

Table 5-129. Patient Control Unit and Communication Module— "C" Version Beds Without Air Only

Siderail Option	Patient Control Assembly Complete		Patient Control Overlay	
	Right-Hand	Left-Hand	Right-Hand	Left-Hand
52	45078-10 (1000)	45078-09 (1000)	38354-05 (1000)	38393-05 (1000)
53	45078-08 (1000)	45078-07 (1000)	38354-04 (1000)	38393-04 (1000)
54	45078-10 (1000)	45078-09 (1000)	38354-05 (1000)	38393-05 (1000)
55	45078-08 (1000)	45078-07 (1000)	38354-04 (1000)	38393-04 (1000)
56	45078-10 (1000)	45078-09 (1000)	38354-05 (1000)	38393-05 (1000)
59	45078-12 (1000)	45078-11 (1000)	38354-06 (1000)	38393-06 (1000)

Siderail Option	Switchboard Assembly	Communication Housing Assembly	
	Right-Hand and Left-Hand	Right-Hand	Left-Hand
52	See "Patient Control Assembly Complete."	44632-02-48 (1000)	44632-02-48 (1000)
53	See "Patient Control Assembly Complete."	44632-02-48 (1000)	44632-02-48 (1000)
54	See "Patient Control Assembly Complete."	44632-02-48 (1000)	44632-01-48 (1000)
55	See "Patient Control Assembly Complete."	44632-02-48 (1000)	44632-01-48 (1000)
56	See "Patient Control Assembly Complete."	34454-48 (1000)	44632-03-48 (1000)
59	See "Patient Control Assembly Complete."	34454-48 (1000)	34454-48 (1000)

Table 5-130. Patient Control Unit and Communication Module— "E" and "F" Version Beds With Air Only

Siderail Option	Patient Control Assembly Complete		Patient Control Overlay	
	Right-Hand	Left-Hand	Right-Hand	Left-Hand
51	45078-04 (1000)	45078-03 (1000)	38354-02 (1000)	38393-02 (1000)
52	45078-04 (1000)	45078-03 (1000)	38354-02 (1000)	38393-02 (1000)
53	45078-02 (1000)	45078-01 (1000)	38354-01 (1000)	38393-01 (1000)
54	45078-04 (1000)	45078-03 (1000)	38354-02 (1000)	38393-02 (1000)
55	45078-02 (1000)	45078-01 (1000)	38354-01 (1000)	38393-01 (1000)
56	45078-04 (1000)	45078-03 (1000)	38354-02 (1000)	38393-02 (1000)
59	45078-06 (1000)	45078-05 (1000)	38354-03 (1000)	38393-03 (1000)

Siderail Option	Switchboard Assembly	Communication Housing Assembly	
	Right-Hand and Left-Hand	Right-Hand	Left-Hand
51	See "Patient Control Assembly Complete."	616340848 (1000)	616340848 (1000)
52	See "Patient Control Assembly Complete."	616340248 (1000)	616340248 (1000)
53	See "Patient Control Assembly Complete."	616340248 (1000)	616340248 (1000)
54	See "Patient Control Assembly Complete."	616340248 (1000)	616340148 (1000)
55	See "Patient Control Assembly Complete."	616340248 (1000)	616340148 (1000)
56	See "Patient Control Assembly Complete."	34454-48 (1000)	616340748 (1000)
59	See "Patient Control Assembly Complete."	34454-48 (1000)	34454-48 (1000)

Table 5-131. Patient Control Unit and Communication Module— "E" and "F" Version Beds Without Air Only

Siderail Option	Patient Control Assembly Complete		Patient Control Overlay	
	Right-Hand	Left-Hand	Right-Hand	Left-Hand
51	45078-10 (1000)	45078-09 (1000)	38354-05 (1000)	38393-05 (1000)
52	45078-10 (1000)	45078-09 (1000)	38354-05 (1000)	38393-05 (1000)
53	45078-08 (1000)	45078-07 (1000)	38354-04 (1000)	38393-04 (1000)
54	45078-10 (1000)	45078-09 (1000)	38354-05 (1000)	38393-05 (1000)
55	45078-08 (1000)	45078-07 (1000)	38354-04 (1000)	38393-04 (1000)
56	45078-10 (1000)	45078-09 (1000)	38354-05 (1000)	38393-05 (1000)
59	45078-12 (1000)	45078-11 (1000)	38354-06 (1000)	38393-06 (1000)

Siderail Option	Switchboard Assembly	Communication Housing Assembly	
	Right-Hand and Left-Hand	Right-Hand	Left-Hand
51	See "Patient Control Assembly Complete."	616340848 (1000)	616340848 (1000)
52	See "Patient Control Assembly Complete."	616340248 (1000)	616340248 (1000)
53	See "Patient Control Assembly Complete."	616340248 (1000)	616340248 (1000)
54	See "Patient Control Assembly Complete."	616340248 (1000)	616340148 (1000)
55	See "Patient Control Assembly Complete."	616340248 (1000)	616340148 (1000)
56	See "Patient Control Assembly Complete."	34454-48 (1000)	616340748 (1000)
59	See "Patient Control Assembly Complete."	34454-48 (1000)	34454-48 (1000)

Siderail Control Switch Units

Table 5-132. Nurse Control Unit—“A” and “B” Version Beds Only

Siderail Option	Nurse Control Assembly Complete RH and LH	Hilow Switch
52	44119-01 (1000)	43386 (1000) Quantity (2)
53	44119-01 (1000)	43386 (1000) Quantity (2)
54	44119-01 (1000)	43386 (1000) Quantity (2)
55	44119-01 (1000)	43386 (1000) Quantity (2)
56	44119-01 (1000)	43386 (1000) Quantity (2)
59	44119-02 (1000)	43386 (1000) Quantity (2)

Siderail Option	Nurse Call Switch	Nurse Control Overlay	Outer Control Panel
52	SA1593 (1000)	38394-01 (1000)	38333 (1000)
53	SA1593 (1000)	38394-01 (1000)	38333 (1000)
54	SA1593 (1000)	38394-01 (1000)	38333 (1000)
55	SA1593 (1000)	38394-01 (1000)	38333 (1000)
56	SA1593 (1000)	38394-01 (1000)	38333 (1000)
59	SA1593 (1000)	38394-02 (1000)	38532 (1000)

Table 5-133. Nurse Control Unit—"C" Version Beds Only

Siderail Option	Unit Complete		Hilow Switch	Head Switch
	LH	RH		
52	44668-03 (1000)	44668-04 (1000)	30816-01 (1000) Quantity (2)	30816-01 (1000) Quantity (2)
53	44668-03 (1000)	44668-04 (1000)	30816-01 (1000) Quantity (2)	30816-01 (1000) Quantity (2)
54	44668-03 (1000)	44668-04 (1000)	30816-01 (1000) Quantity (2)	30816-01 (1000) Quantity (2)
55	44668-03 (1000)	44668-04 (1000)	30816-01 (1000) Quantity (2)	30816-01 (1000) Quantity (2)
56	44668-03 (1000)	44668-04 (1000)	30816-01 (1000) Quantity (2)	30816-01 (1000) Quantity (2)
59	44668-05 (1000)	44668-06 (1000)	30816-01 (1000) Quantity (2)	30816-01 (1000) Quantity (2)

Siderail Option	Nurse Call Switch	Nurse Control Overlay		Outer Control Panel
		LH	RH	
52	30817 (1000)	44772-03 (1000)	44772-04 (1000)	44769 (1000)
53	30817 (1000)	44772-03 (1000)	44772-04 (1000)	44769 (1000)
54	30817 (1000)	44772-03 (1000)	44772-04 (1000)	44769 (1000)
55	30817 (1000)	44772-03 (1000)	44772-04 (1000)	44769 (1000)
56	30817 (1000)	44772-03 (1000)	44772-04 (1000)	44769 (1000)
59	None	44772-05 (1000)	44772-06 (1000)	44769 (1000)

Motor Parts List

Table 5-134. 115 Volt Motors

Type	Model Number	H.R. Number	Gears	Capacitor
Hilow	K037MYC233687	43369 (1000)	SA4919 (1000)	43025-01 (1000)
Hilow	1870110030	43369 (1000)	SA4920 (1000)	43025-01 (1000)
Head	K037HXC233688	43370 (1000)	SA4921 (1000)	43025-01 (1000)
Head	1870110027	43370(1000)	SA7311 (1000)	43025-01 (1000)
Knee	K37MYC22332	35000S (1000)	SA3348 (1000)	40434 (1000)

Table 5-135. 230 Volt Motors

Type	Model Number	H.R. Number	Gears	Capacitor
Hilow	K037MYC233719	44529 (1000)	SA4919 (1000)	44532 (1000)
Head	18701100C31	44530 (1000)	SA7311 (1000)	43610-01 (1000)
Knee	K37MYC22370	40459-01 (1000)	SA3348 (1000)	30143 (1000)

VIP Foot Panel Assemblies

Table 5-136. Liberty Hill Models Foot Panel Assemblies

Bed Model	"A" and "B" Version Beds (with Toggle Switches)	"C" and "E" Version Beds (with Membrane Switches)	"F" Version Beds (with Membrane Switches)
P1105	P924061AH4C	P924061BH4C	P924061CH4C
P1115	P924062AH4C	P924062BH4C	P924062CH4C
P1135	P924063AH4C	P924063BH4C	P924063CH4C
P1145	P924064AH4C	P924064BH4C	P924064CH4C
P1155	—	P924165AH4C	P924165BH4C
P1165	—	P924166AH4C	P924166BH4C

Table 5-137. Freedom Hill Models Foot Panel Assemblies

Bed Model	"A" and "B" Version Beds (with Toggle Switches)	"C" and "E" Version Beds (with Membrane Switches)	"F" Version Beds (with Membrane Switches)
P1105	P934061AH5O	P934061BH5O	P934061CH5O
P1115	P934062AH5O	P934062BH5O	P934062CH5O
P1135	P934063AH5O	P934063BH5O	P934063CH5O
P1145	P934064AH5O	P934064BH5O	P934064CH5O
P1155	—	P934165AH5O	P934165BH5O
P1165	—	P934166AH5O	P934166BH5O

NOTES:

Chapter 6
General Procedures

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6

NOTES:

Cleaning and Care

SHOCK HAZARD:

Unplug the bed from its power source. Failure to do so could result in personal injury or equipment damage.

SHOCK HAZARD:

Do not expose the bed to excessive moisture. Personal injury or equipment damage could occur.

WARNING:
Follow the product manufacturer's instructions. Failure to do so could result in personal injury or equipment damage.

CAUTION:
Do not use harsh cleaners, solvents, or detergents. Equipment damage could occur.

General Cleaning

Clean the unit with a lightly dampened cloth and ordinary disinfectants. Do not use excessive liquids.

Steam Cleaning

Do not use any steam cleaning device on the Advance Series Bed, the DynamicAire Sleep Surface, or the ZoneAire Sleep Surface. Excessive moisture can damage mechanisms in the unit.

Hard to Clean Spots

To remove difficult spots or stains, use standard household cleaners and a soft bristle brush. To loosen heavy, dried-on soil or excreta, you may first need to saturate the spot.

Disinfection

Dilute disinfectants and germicides as specified on the manufacturer's label.

Component Handling

CAUTION:
Ensure that your hands are clean, and handle the P.C. boards by their edges **only** to prevent component damage. Wear an appropriate static strap when working with electronics. Equipment damage can occur.

CAUTION:
Place the removed P.C. boards in anti-static protective bags for shipping and storage. Equipment damage can occur.

P.C. Boards

Good handling practices must be followed when servicing P.C. boards. Mishandling can cause damage to the P.C. boards, shorten their service life, and result in bed malfunctions. The following rules for handling should always be observed:

- Wear an appropriate anti-static (electrostatic discharge) strap, and ensure it is properly grounded when working with electronics.
- Ensure that hands are clean and free of moisture or oily liquids (etc.).
- Handle the P.C. boards by their outer edges only. Do not touch the components on the P.C. board. Finger contact with the board surface and/or with its components can leave a deposit which will result in board (and component) deterioration.
- Service the removed P.C. boards at a static-free workstation which is properly grounded.
- Place the removed P.C. boards in anti-static protective bags for shipping and storage.

Lubrication Requirements

WARNING:
Follow the product manufacturer's instructions. Failure to do so could result in personal injury or equipment damage.

CAUTION:
Do not use silicone-based lubricants. Equipment damage could occur.

Oilite bearings and bushings are utilized in several places on the bed. By retaining oil, the pores give self-lubricating quality to the bearings and bushings. If any silicone-based lubricant is applied to the bearings and busings or anywhere else on the bed, this self-lubricating quality is neutralized.

It is safe to apply the following lubricants to the bed:

- P/N 8252 M-1 penetrating oil (small bottle—apply to the oilite bushings and bearings)
- P/N SA3351 lithium grease (small tube—apply to the drive screws)
- P/N SA3352 gear grease (small tube—apply to the motor gears only)
- P/N SA0646 Teflon spray lubricant (dry) (aerosol spray can—apply anywhere else the bed needs lubrication)

Preventive Maintenance

WARNING:
Only facility-authorized maintenance personnel should perform preventive maintenance on the Advance Series Bed. Preventive maintenance performed by unauthorized personnel could result in personal injury or equipment damage.

The Advance Series Bed requires an effective maintenance program. We recommend that you perform annual preventive maintenance (PM) and testing for Joint Commission on Accreditation of Healthcare Organizations (JCAHO). PM and testing not only meet JCAHO requirements but will help to ensure a long operative, and productive life for the Advance Series Bed. PM will minimize downtime due to excessive wear.

The following PM schedule guides a technician through a normal PM procedure on the Advance Series Bed. During this PM process, check each item on the schedule, and make the necessary adjustments.

Follow the PM schedule with the corresponding PM checklist. This checklist is designed to keep a running maintenance history and subsequent repair costs for one Advance Series Bed. However, your facility can modify this checklist or design another to fit your needs. Keeping close records and maintaining the Advance Series Bed are two effective ways to reduce downtime and ensure the patient remains comfortable.

Preventive Maintenance Schedule

Table 6-1. Preventive Maintenance Schedule

Function	Procedure
Head limits	Run the head section to the full upper and lower limits to ensure proper function of the limit switches.
Knee limits	Run the knee section to the full upper and lower limits to ensure proper function of the limit switches.
Hilow limits	Run the bed to the full upper and lower limits to ensure proper function of both head and foot hilow drive limit switches.
Contour limit	Run the head section up to ensure that the knee section raises to 15° to form a contour position. This function is defeated by activating the knee lockout switch in the nurse control panel.
Trendelenburg limits	Run the bed into both the Trendelenburg and Reverse Trendelenburg positions to check the limits. Check the degree indicator for accuracy.

Function	Procedure
Head drive screw	Inspect, clean, and lubricate the head drive screw with red lithium grease. Inspect the sliding head cover on the upper frame assembly. Raise the metal tongue on the head cover if it is bent down. Inspect the clip engagement, torque cage, and lift nut. Ensure that they are in proper working order and have not been damaged if the metal tongue was bent.
Knee drive screw	Inspect, clean, and lubricate the knee drive screw with red lithium grease.
Hilow head drive screw	Inspect, clean, and lubricate the hilow head drive screw with red lithium grease.
Hilow foot drive screw	Inspect, clean, and lubricate the hilow foot drive screw with red lithium grease.
Motor capacitors	Check the capacitors to ensure that they are not weak or defective.
Siderail controls	Test the siderail switches for proper operation. Check for momentary operation of the switches.
Bed exit	Ensure the bed exit system works properly and that it places the appropriate call when activated.
Communications	Inspect and test the communication junction box. Test the SideCom Communication System features for proper operation. Inspect the communication cable including the male and female pins in the plug.
Siderail frame	Test the siderail for proper latching.
Pivot points	Lubricate all pivot points on the bed.
CPR release	Test the CPR release for proper operation and reset of the head screw drive. Adjust the CPR release if necessary (see “CPR Handle” on page 4-110).
Night light	Check the night light to ensure that it functions properly. If required, adjust the sensitivity with a screwdriver at the electronics pan assembly.
Central brake and steer	Test the brake casters to determine if the bed moves when you activate the brake mode. Test the steer mode to determine if the left foot end caster locks in the steer mode when you activate the steer mode. (See “Casters” on page 4-121 if any adjustment is required.)
Caster tires	Check the tires for cuts, wear, tread life, etc.
Power cord and plug	Inspect the power cord and plug for cuts, nicks, or breaks.
Head and foot panels	Check the aesthetics.
Overall appearance	Check the general aesthetics of the bed. Touch up the paint where necessary. Inspect the labels, and replace as necessary.
Electrical test	Test the bed for electrical leakage. Ground resistance must be less than 0.20 ohms. Leakage current must be less than 65 micro amps for 115 volt models, and less than 90 micro amps for 230 volt models.

Function	Procedure
Nurse control panel	Test all the bed function switches in the nurse control panel for proper operation of the function and momentary operation. Test all of the lockout switches individually for proper operation.
LED indicators	Check all of the LEDs on the footboard to ensure proper operation.
Bed scale	Check the accuracy of the bed scale with different weights. Test for proper operation of the scale functions and adjustments.
DynamicAire Sleep Surface	Check the mattress and air bladders for punctures, cuts, or tears. Inspect the air compressor unit. Monitor the fill and dump times for the air bladders. Check all of the hose connections and O-rings to prevent air leaks.
ZoneAire Sleep Surface	Check the mattress and air bladders for punctures, cuts, or tears. Inspect the air compressor unit. Check all of the hose connections (to the mattress and inside of the mattress) and O-ring to prevent air leaks. Check each zone for function. Check all switches and the CPR release.

Preventive Maintenance Checklist

Table 6-2. Preventive Maintenance Checklist

Date																						Function
Hill-Rom Company Inc.	Manufacturer																					Head limits
																						Knee limits
																						Hilow limits
																						Contour limit
																						Trendelenburg limits
																						Head drive screw
																						Knee drive screw
																						Hilow head drive screw
	Model Number																					Hilow foot drive screw
																						Motor capacitors
																						Siderail controls
																						Bed exit
																						Communications
																						Siderail frame
																						Pivot points
																						CPR release
	Serial Number																					Night light
																						Central brake and steer
																						Caster tires
																						Power cord and plug
																						Head and foot panels
																						Overall appearance
																						Electrical test
																						Nurse control panel
																						LED indicators
																						Bed scale
																						DynamicAire Sleep Surface
																						ZoneAire Sleep Surface
	Total Cost for This Page																					Labor Time:
																						Repair Cost:
																						Inspected By:
																						Legend L=Lube C=Clean A=Adjust R=Repair or Replace O=Okay N=Not Applicable Remarks:

Preventive Maintenance—ZoneAire Sleep Surface

WARNING:
Only facility-authorized maintenance personnel should perform preventive maintenance on the ZoneAire Sleep Surface. Preventive maintenance performed by unauthorized personnel could result in personal injury or equipment damage.

The ZoneAire Sleep Surface requires an effective maintenance program. We recommend that you perform annual preventive maintenance (PM) and testing for Joint Commission on Accreditation of Healthcare Organizations (JCAHO). PM and testing not only meet JCAHO requirements but will help to ensure a long operative, and productive life for the ZoneAire Sleep Surface. PM will minimize downtime due to excessive wear.

The following PM schedule guides a technician through a normal PM procedure on the ZoneAire Sleep Surface. During this PM process, check each item on the schedule, and make the necessary adjustments.

Follow the PM schedule with the corresponding PM checklist. This checklist is designed to keep a running maintenance history and subsequent repair costs for one ZoneAire Sleep Surface. However, your facility can modify this checklist or design another to fit your needs. Keeping close records and maintaining the ZoneAire Sleep Surface are two effective ways to reduce downtime and ensure the patient remains comfortable.

Preventive Maintenance Schedule—ZoneAire Sleep Surface

Table 6-3. Preventive Maintenance Schedule—ZoneAire Sleep Surface

Function	Procedure
Footboard control panel	Test all of the bed functions switches for proper operation. Test the lockout switches individually for proper operation. Check the switch LEDs and the LED information indicators for proper operation.
Air compressor	Inspect the compressor unit air hoses for punctures, cuts, or tears.
Sleep surface	Check the air bladders for punctures, cuts, or tears. Check all hose connections to the mattress and O-rings for dried out condition.
Functional check	Check each bladder zone for correct functioning. Check the CPR release.
Overall appearance	Check the general aesthetics of the Advance Series Bed ZoneAire Sleep Surface.

Preventive Maintenance Checklist—ZoneAire Sleep Surface

Table 6-4. Preventive Maintenance Checklist—ZoneAire Sleep Surface

Date																						Function
Hill-Rom Company Inc.	Manufacturer																					Footboard control panel
																						Air compressor
																						Sleep surface
																						Function check
																						Overall appearance
	Model Number																					
	Serial Number																					
	Total Cost for This Page																					Labor Time:
																						Repair Cost:
																						Inspected By:
																						Legend L=Lube C=Clean A=Adjust R=Repair or Replace O=Okay N=Not Applicable Remarks:

Tool and Supply Requirements

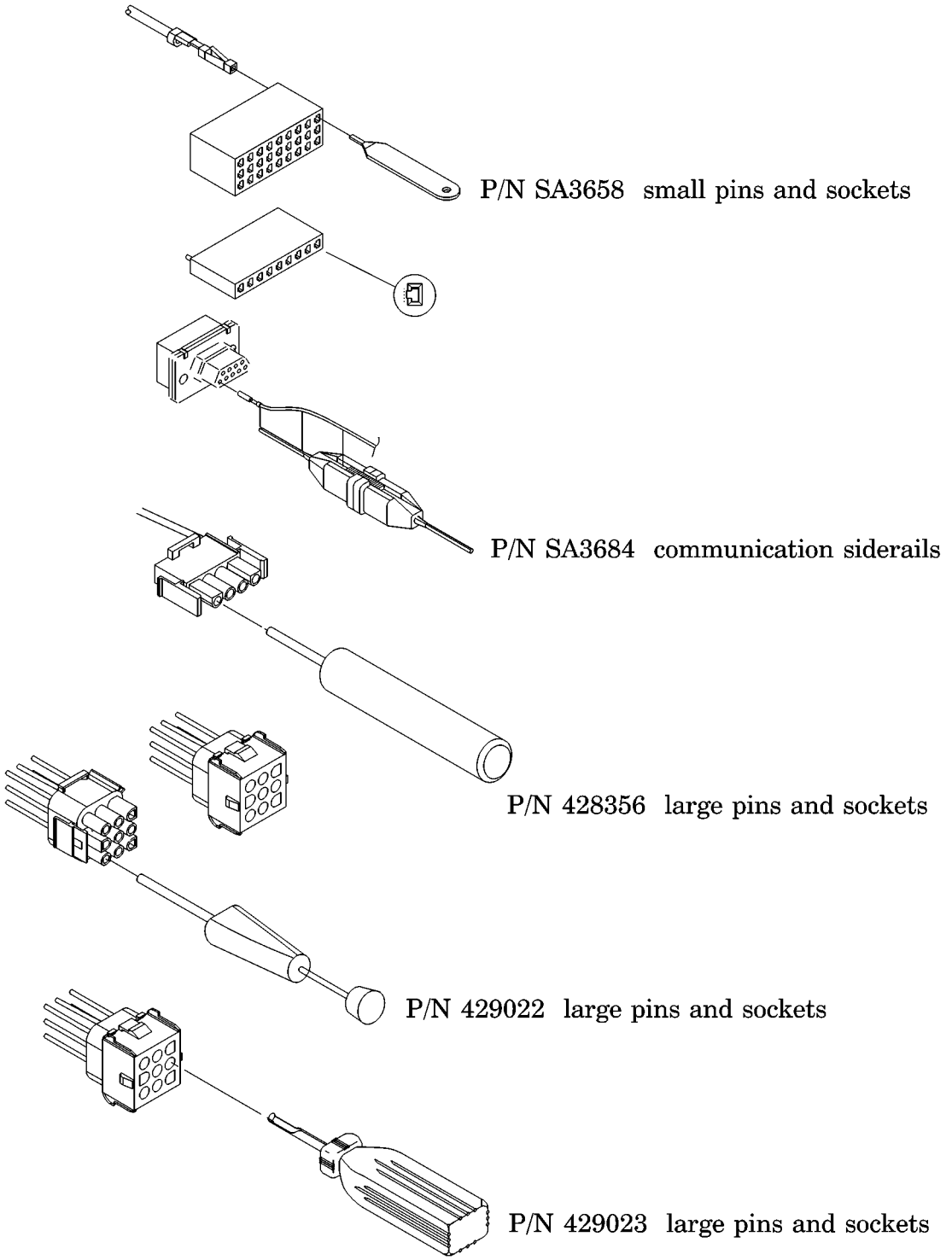
The following tools are required to service the Advance Series Bed:

- 1/8" punch
- 11/32" open end wrench
- 13/16" open end wrench
- Hammer
- Phillips head screwdriver
- Small wire cutters
- Torque wrench (250 in-lb capacity) with 1/4" allen adapter and 1/2" socket
- T45 torx head screwdriver
- 3/16" nut driver
- 5/32" allen wrench
- Screwdriver
- 1/4" allen wrench
- Pliers
- 1/2" wrench
- Adjustable wrench
- Jack stands
- Feeler gauge
- Loctite (P/N SA7110)

Extraction Tools

The five extraction tools used for servicing the wiring cable connectors by Hill-Rom are shown in figure 6-1 on page 6-14. The part numbers are located beside the extraction tool along with a brief description of where the tool is most commonly used. See “Ordering Service Parts” in chapter 5 for information on ordering parts.

Figure 6-1. Extraction Tools Used to Service Wiring Cables and Connectors


P/N SA3658 small pins and sockets
P/N SA3684 communication siderails
P/N 428356 large pins and sockets
P/N 429022 large pins and sockets
P/N 429023 large pins and sockets
m026d227

6

Chapter 7
Accessories

Chapter Contents

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NOTES:

Accessories

See table 7-1 on page 7-3 for the Advance Series Bed accessories.

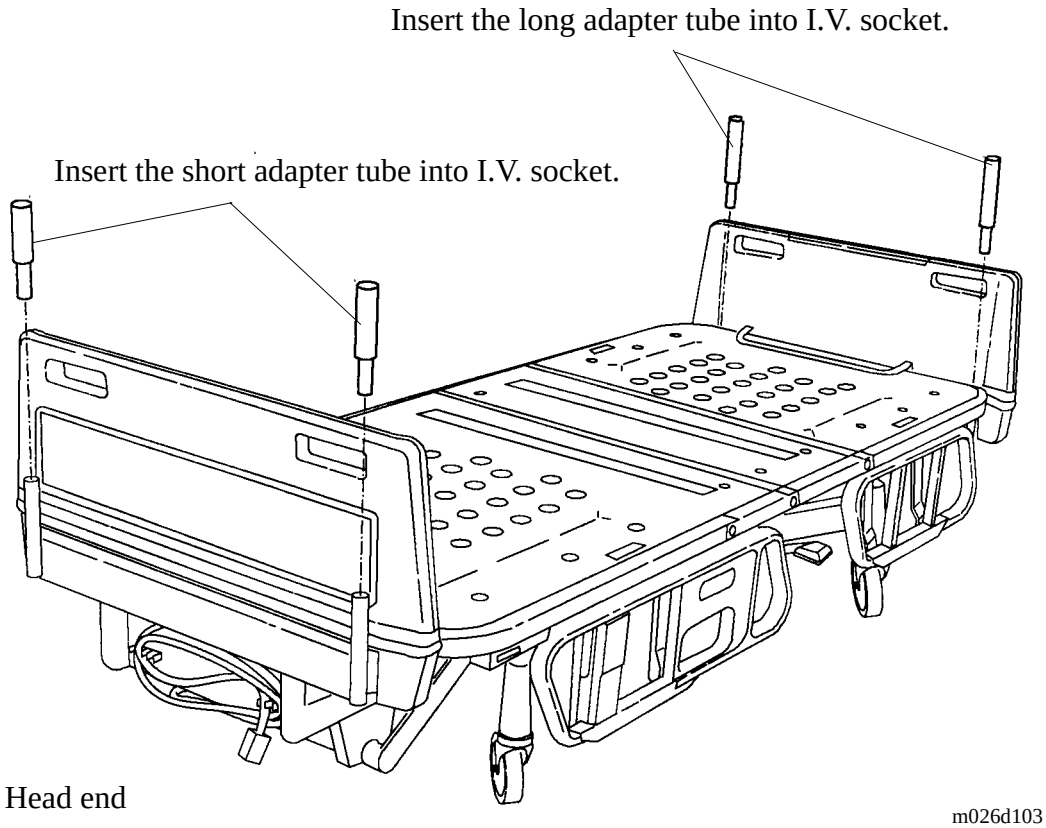
Table 7-1. Accessories List

Part Number	Description
SA1437	1120 R. bumper-face mount (818co3)
SA1438	1120 R. bumper-bottom mount (818co1)
284C-48	Bumper assembly complete
P495-02	Patient Phone
923CD	Air mattress
923ED	Flame retardant mattress
P1410CA01	ZoneAire Sleep Surface mattress with comfort ticking
P1410CA02	ZoneAire mattress with ultron ticking
P1410EA01	ZoneAire mattress with comfort ticking (flame retardant)
P1410EA02	ZoneAire Sleep Surface mattress with ultron ticking (flame retardant)
P945CD	Comfortline mattress
P945ED	Comfortline mattress (flame retardant)
P155-11	ISS bed pole unit face mount
P157-11	ISS block face mount installation kit
155-03	ISS bed pole unit
721C-3	Pendant control
847B	Adapter (fracture frame—3/4" pin)
847C	Adapter (fracture frame—1/2" pin)
P844C-48	Trapeze support
P855C-1	Siderail pads—head and foot
P855C-1H	Siderail pads—head only
P99-32	Bed extender assembly
2217	IV rod
2221	Permanent IV pole

7.1 Fracture Frame Adapter Socket—P847B/P847C

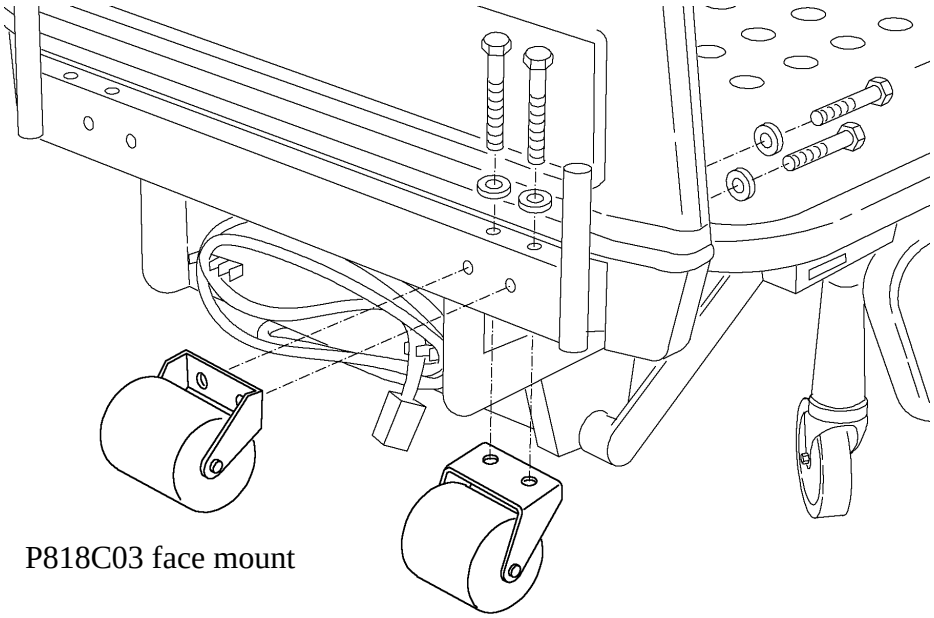
Hill-Rom has two different fracture frame adapter socket sets available to handle most fracture frame equipment. The model P847B sockets have a 3/4" inside diameter while the P847C sockets have a 1/2" inside diameter. Please specify which size is needed when ordering.

Figure 7-1. Fracture Frame Adapter Socket—P847B/P847C



7.2 Roller Bumper Assembly—P818C03/P818C04

Figure 7-2. Roller Bumper Assembly—P818C03/P818C04



P818C03 face mount

m026d122

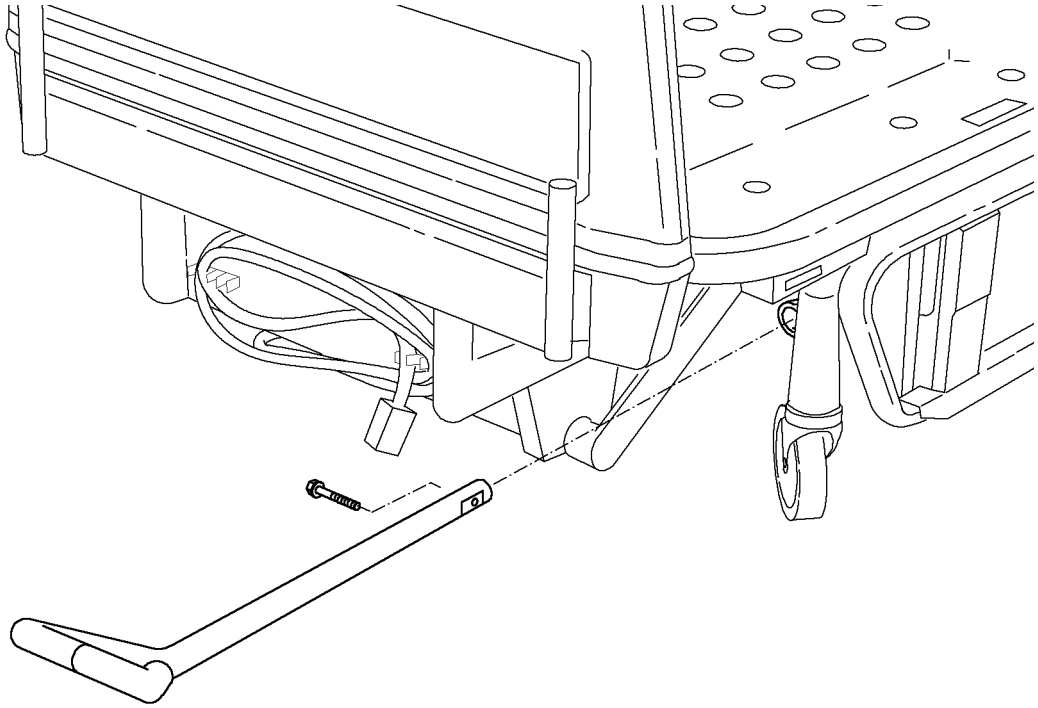
P818C04 bottom/top mount

Note:
Use only one pair of bumpers per bed. Mount them to the top, bottom, or face of the head end channel.

7.3 Cane Bumper Assembly Complete—P284C-48

WARNING:
To prevent tripping, bend in the cane bumper to be in an upward position. Personal injury could result.

Figure 7-3. Cane Bumper Assembly Complete—P284C-48

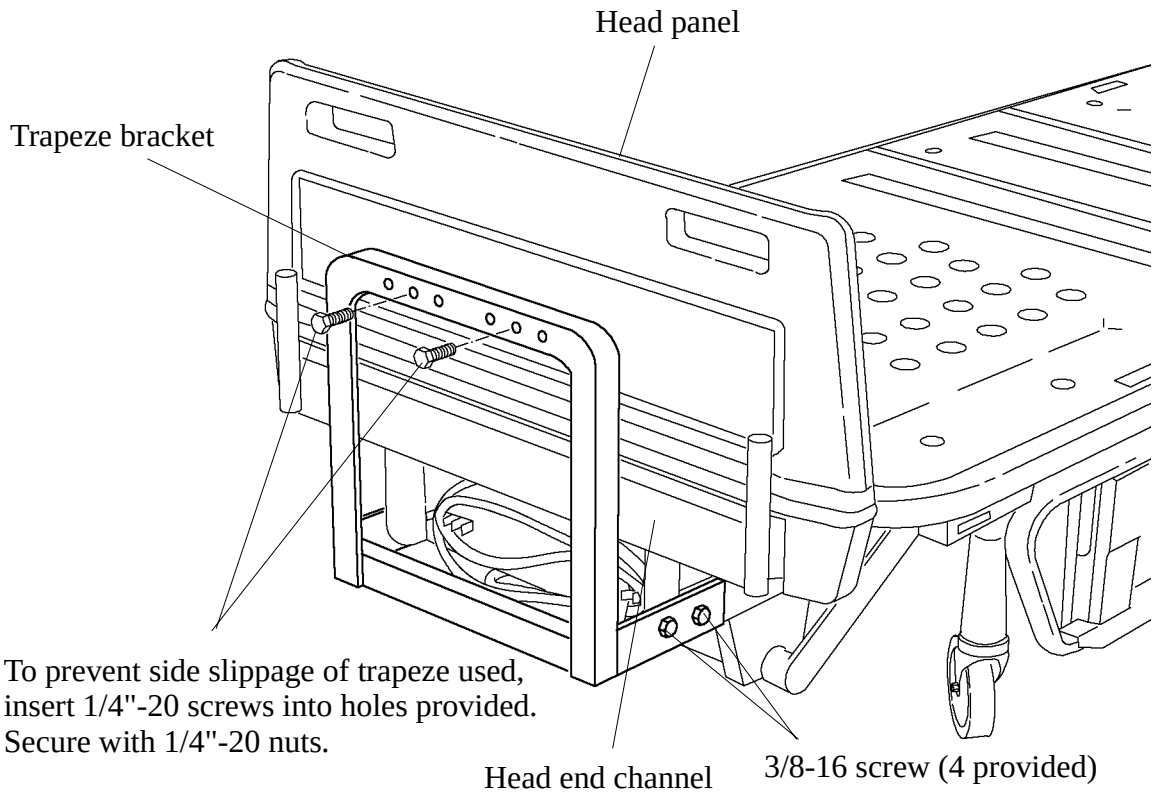


m026d120

WARNING:
To prevent tripping, bend in the cane bumper to be in an upward position. Personal injury could result.

7.4 Trapeze Support Assembly—P844C-48

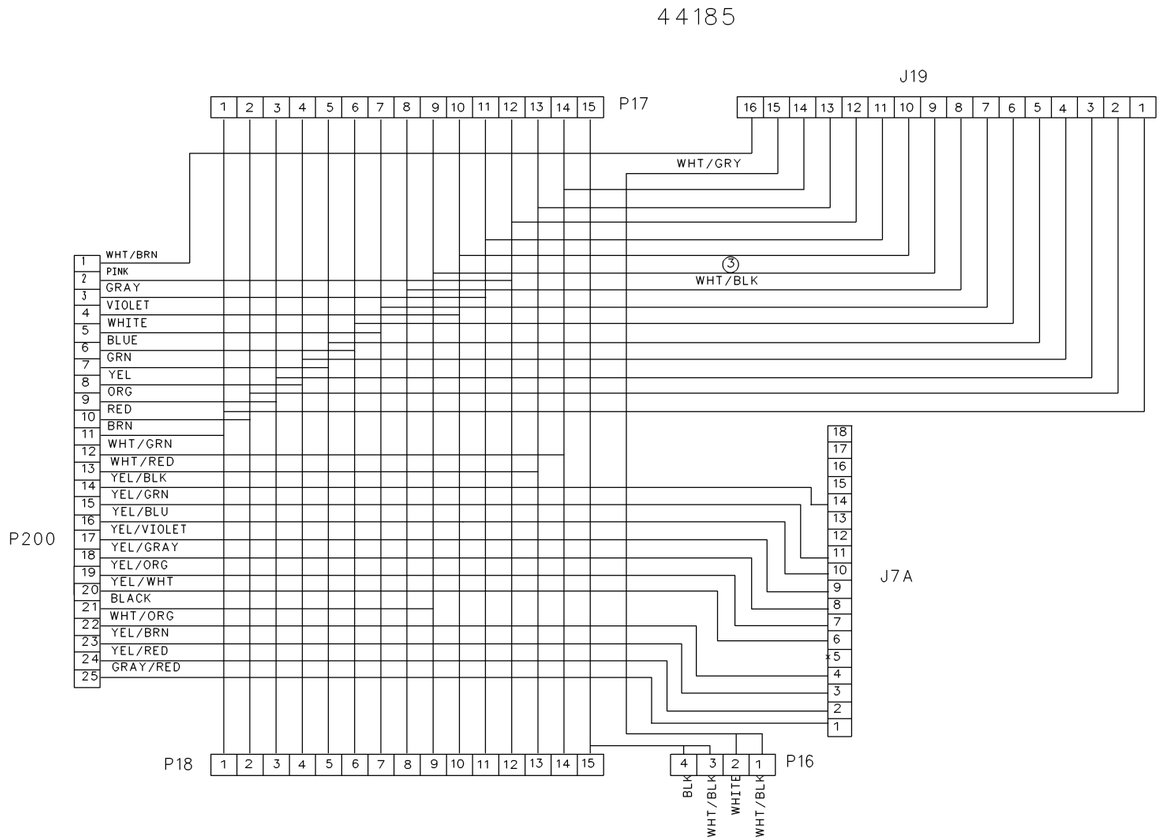
Figure 7-4. Trapeze Support Assembly—P844C-48

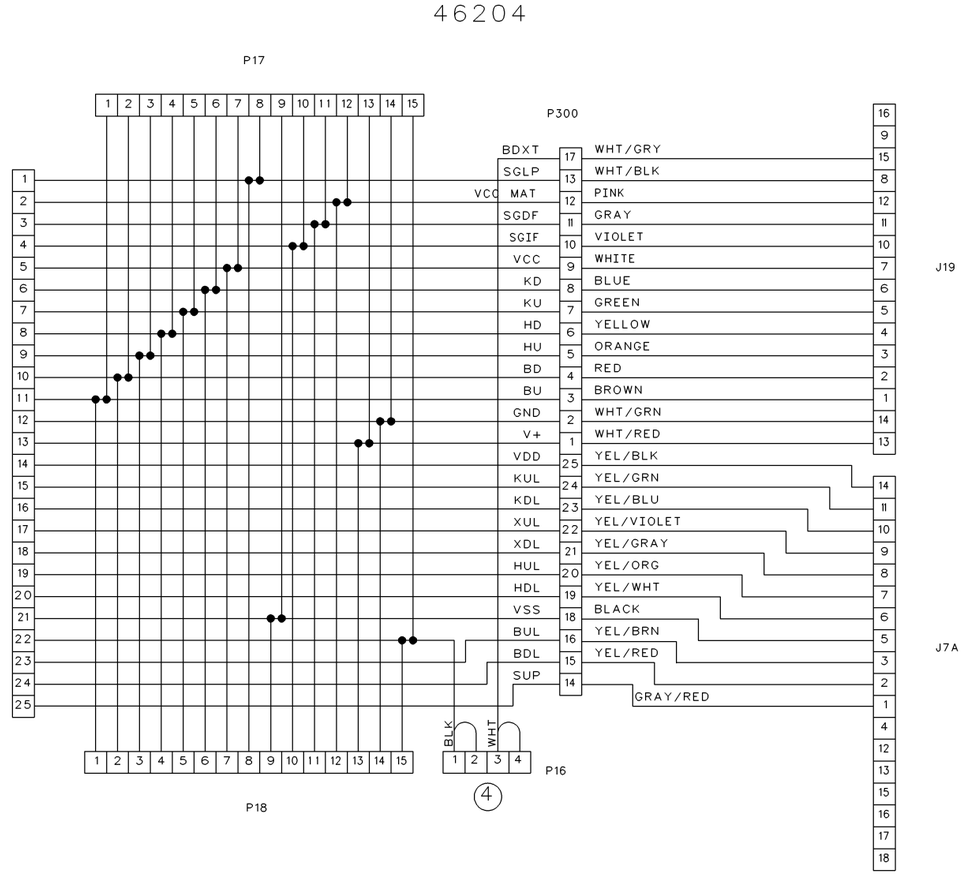


NOTES:

Schematic Wiring Diagram—Test Port Cables P/N 44185, 46204-01

Back to Chapter 3

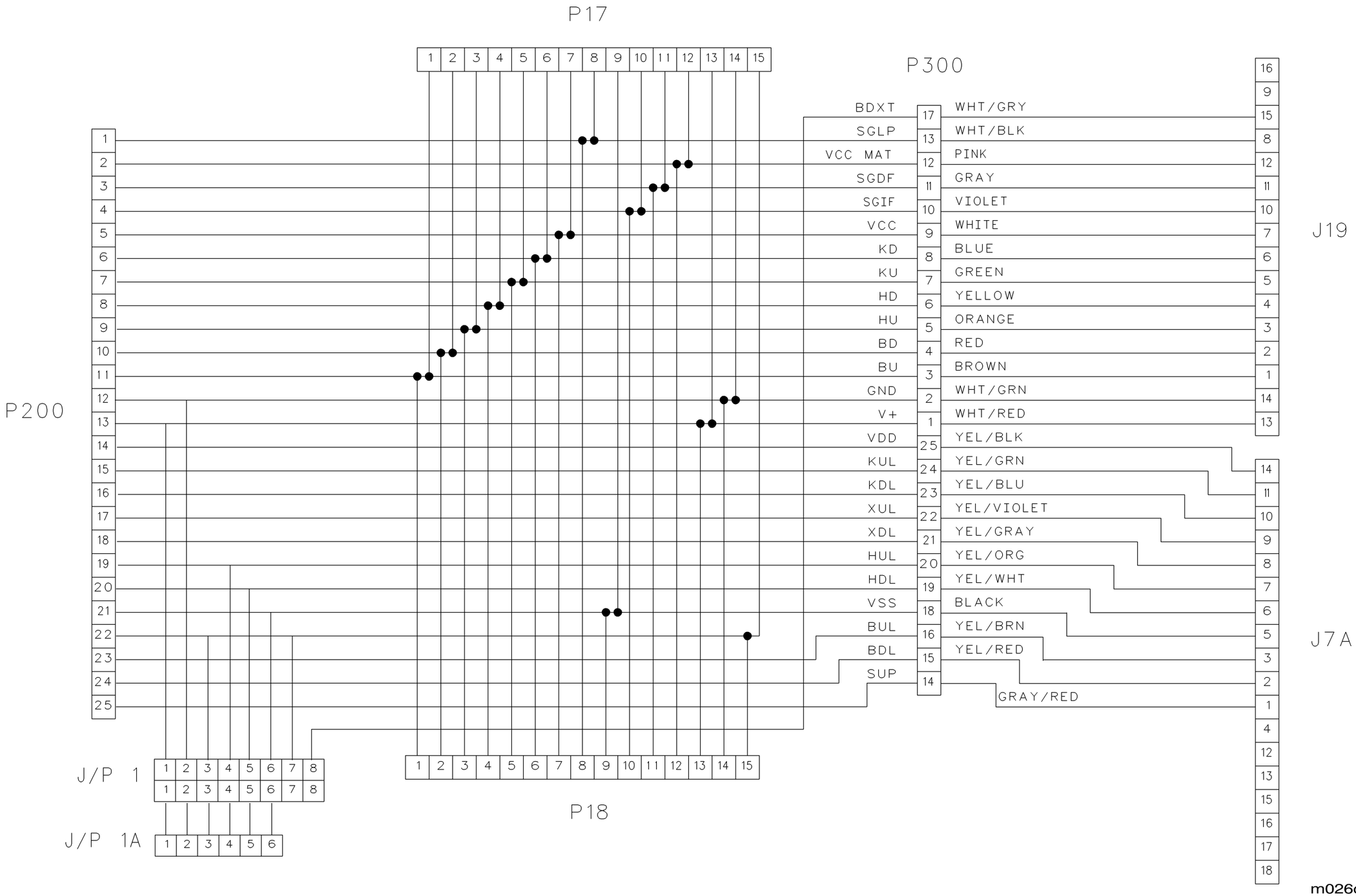




m026d401

Schematic Wiring Diagram—Test Port Cable P/N 60251-01

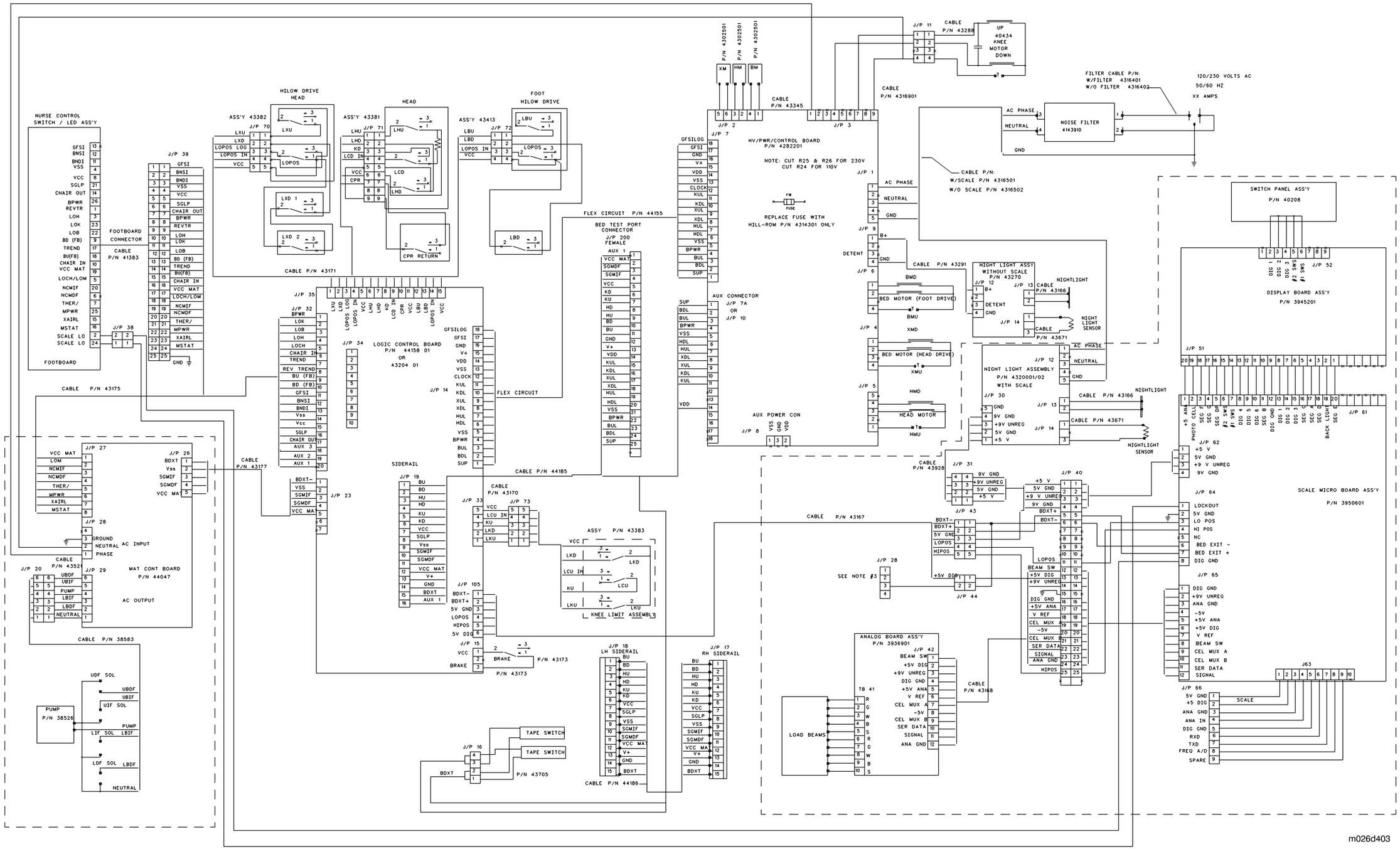
Back to Chapter 3



m026d402

Schematic Wiring Diagram—115V “A” & “B” Version Beds

Back to Chapter 3



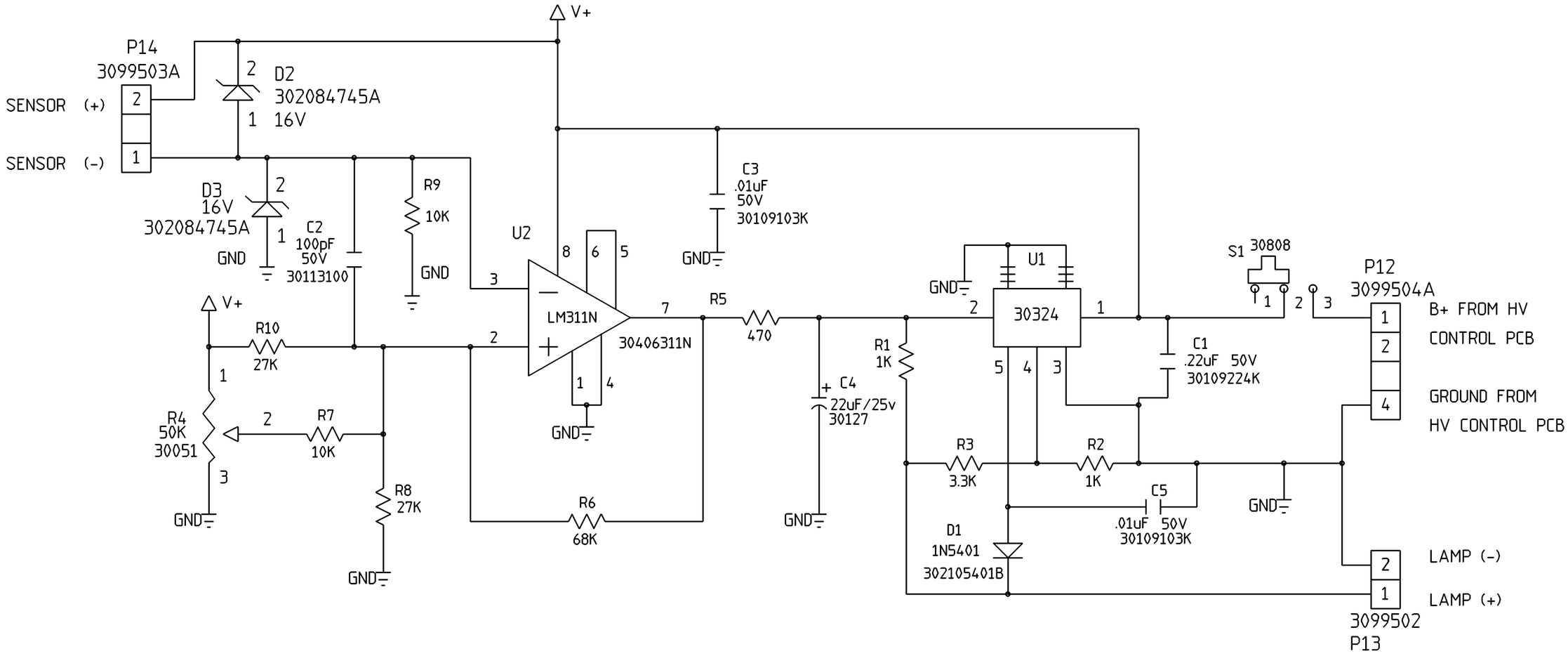
m026d403

NOTES:

1.) LIMIT CONDITIONS HAVE NOT BEEN REACHED FOR SWITCH POSITIONS SHOWN.

2.) FOR DETAIL OF CIRCUIT BOARDS SEE SERVICE MANUAL.

3.) P28 USED ON P1115 ONLY



NOTES : 1) ALL RESISTORS ARE 1/2W 5% UNLESS MARKED OTHERWISE.

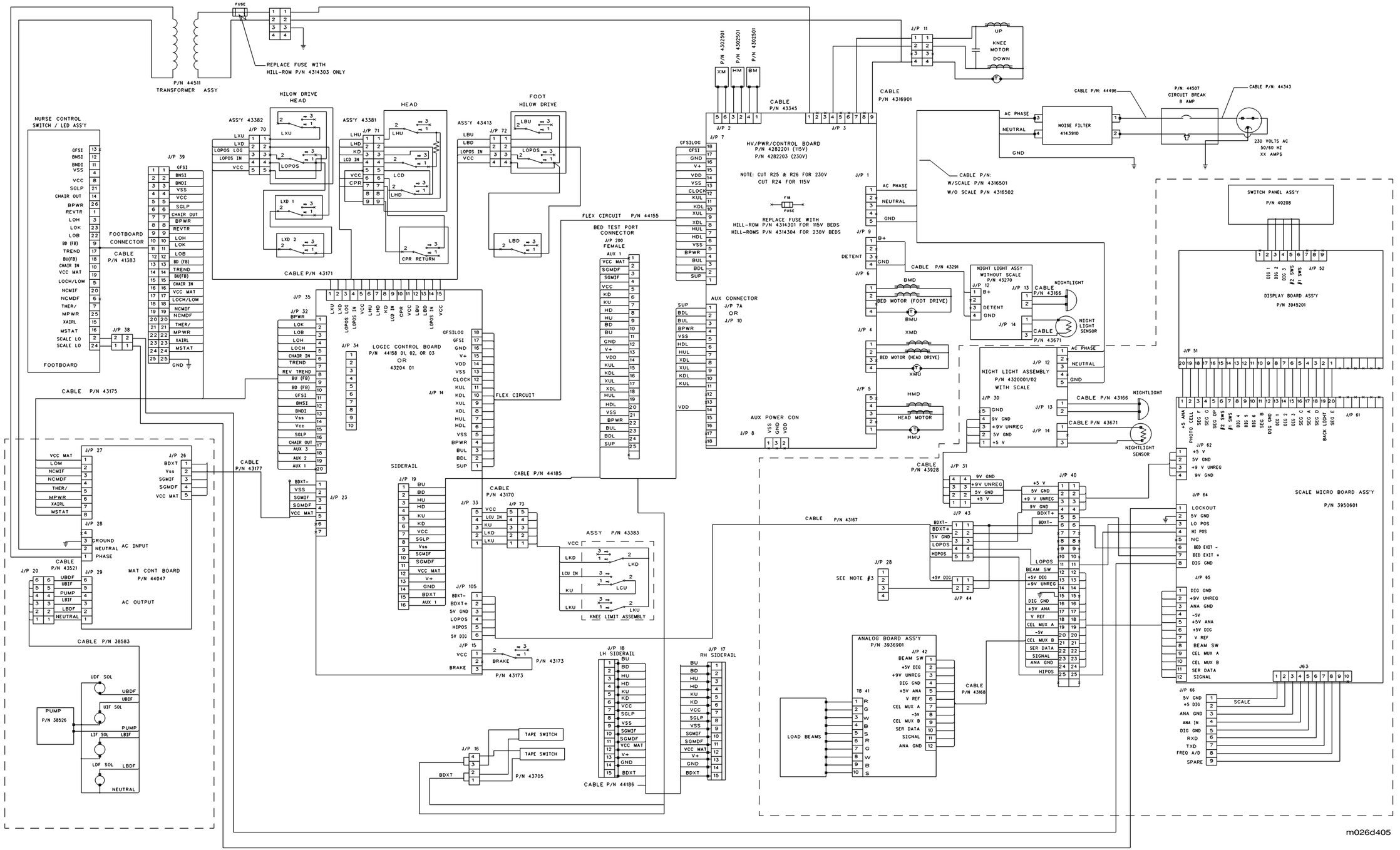
2) CAPACITOR C2 MOUNTED AS CLOSE TO PINS 2 & 3 OF U2 AS POSSIBLE.

3) V+ REPRESENTS UNREGULATED DC SUPPLY VOLTAGE FROM 14V TO 22V.

m026d404

Schematic Wiring Diagram—230V Bed

Back to Chapter 3



NOTES:

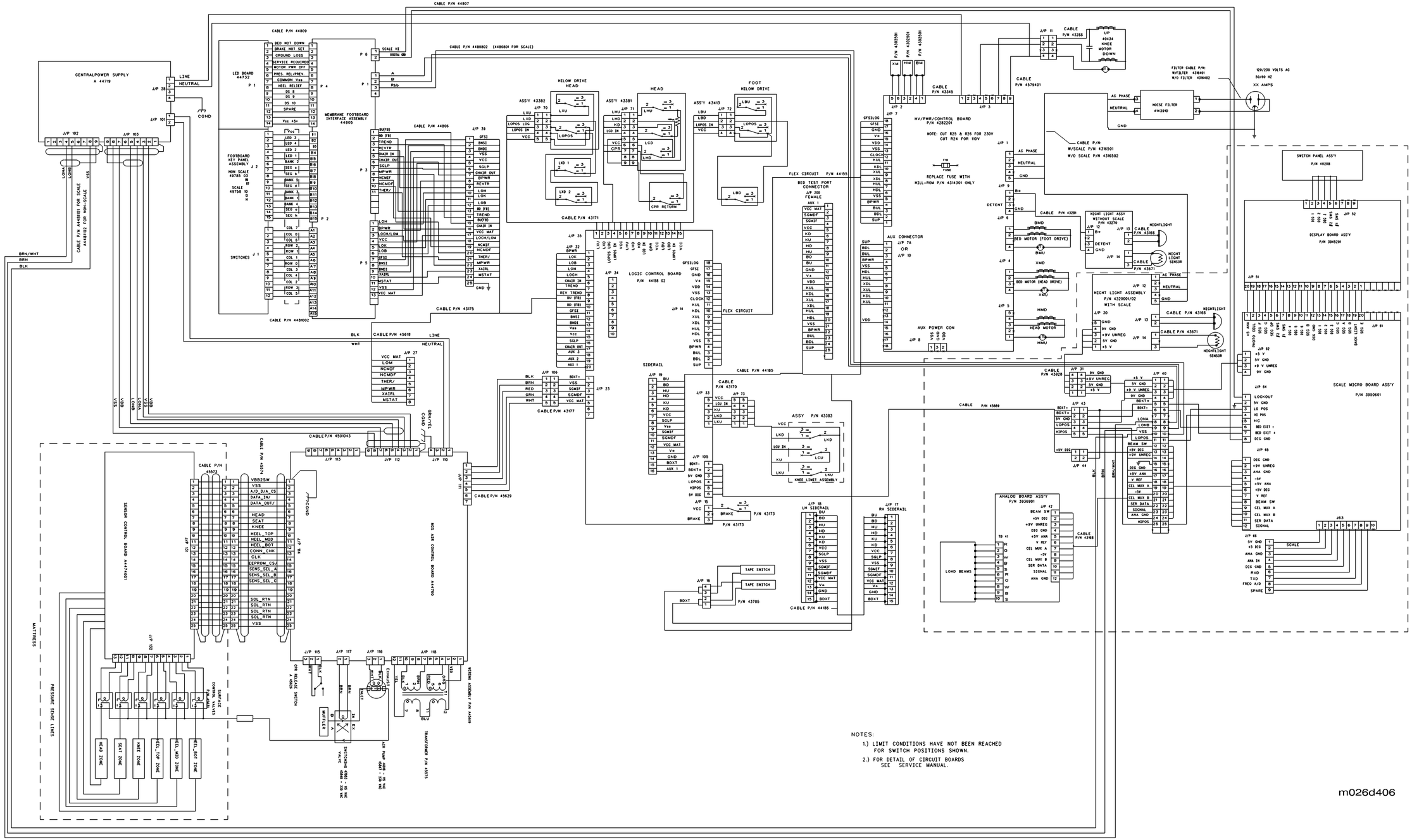
1.) LIMIT CONDITIONS HAVE NOT BEEN REACHED FOR SWITCH POSITIONS SHOWN.

2.) FOR DETAIL OF CIRCUIT BOARDS SEE SERVICE MANUAL.

3.) P28 USED ON P1116 BEDS ONLY

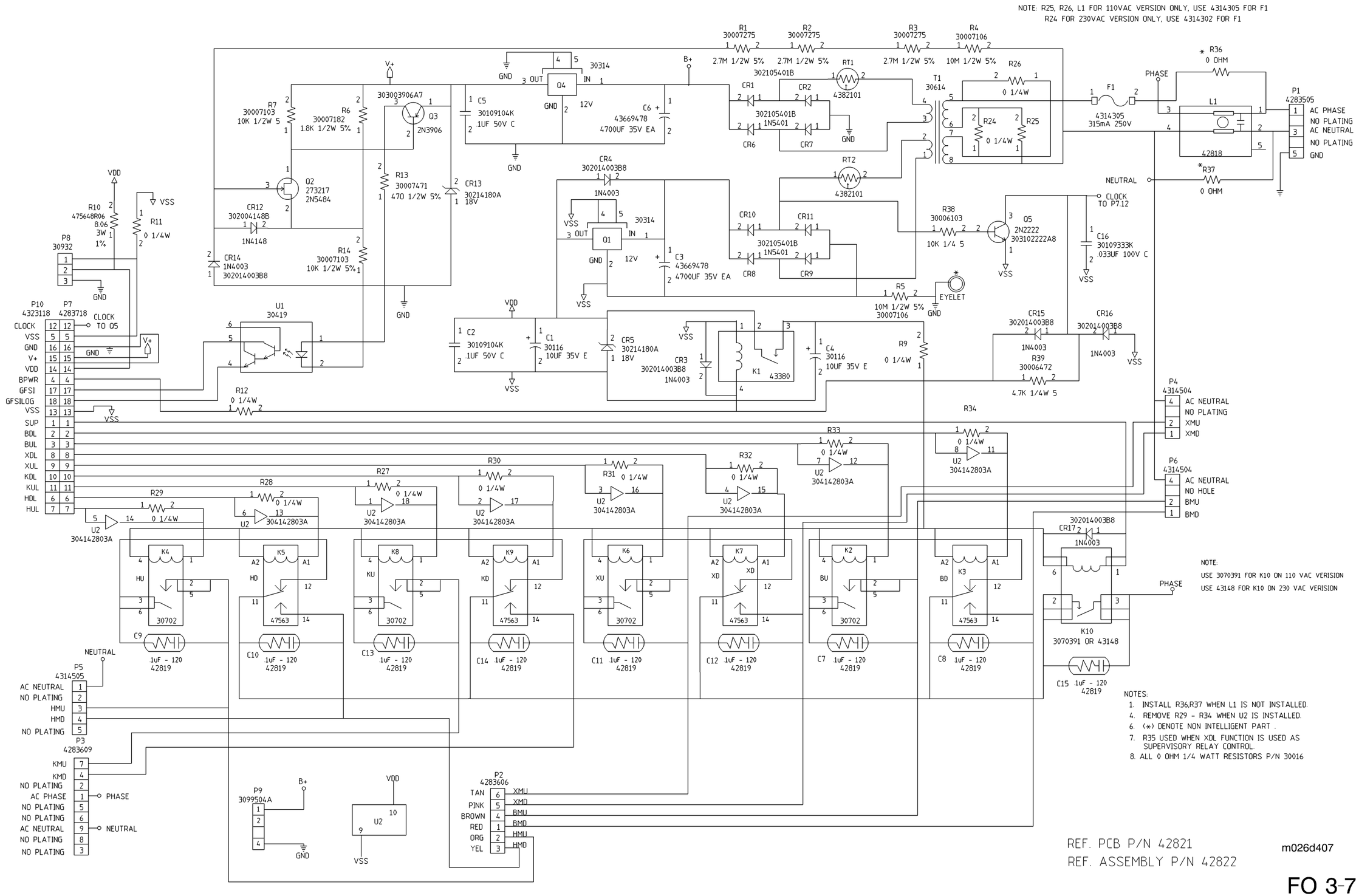
Schematic Wiring Diagram—ZoneAire

Back to Chapter 3



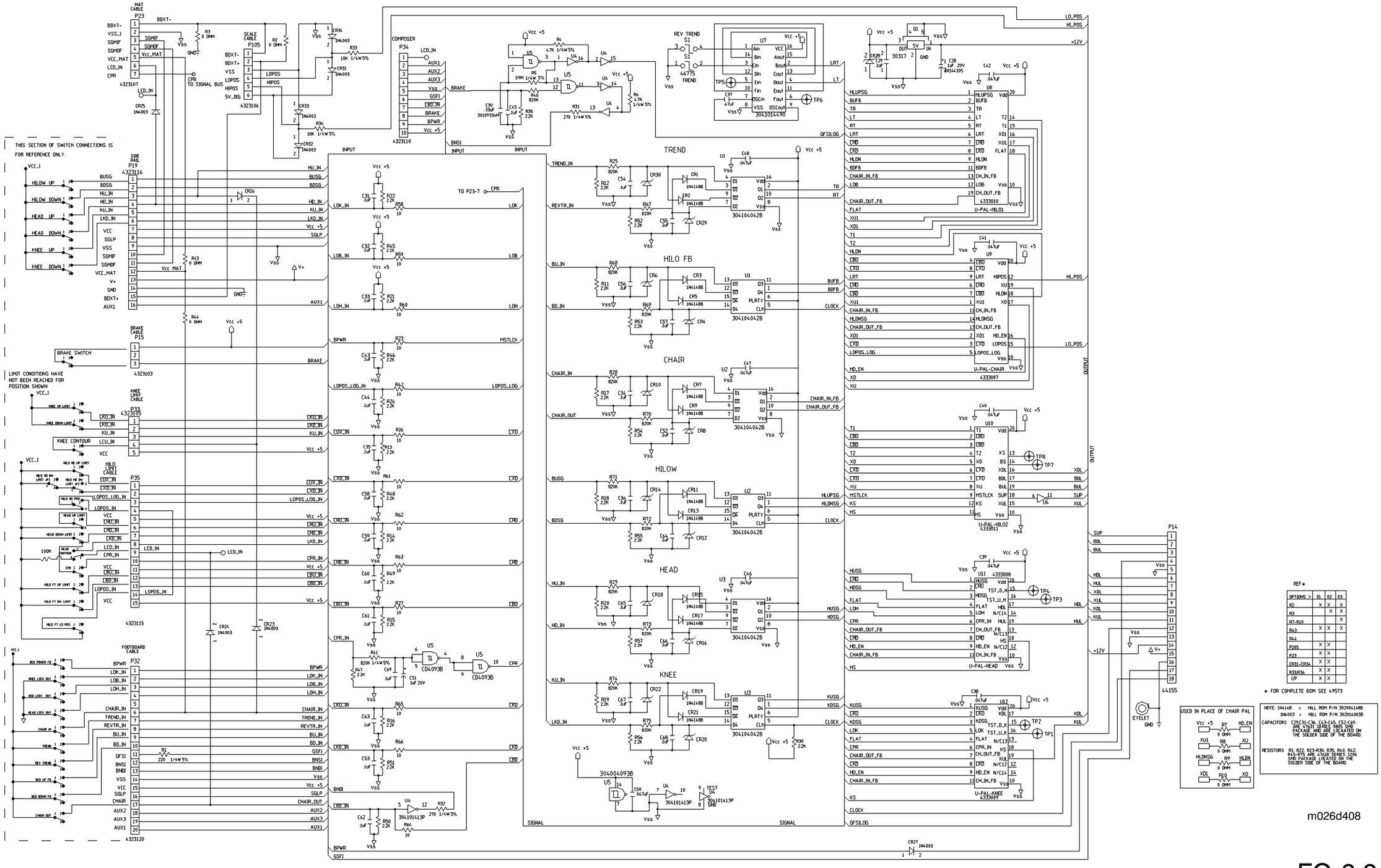
Schematic Wiring Diagram—High Voltage Control Board P/N 42822

Back to Chapter 3



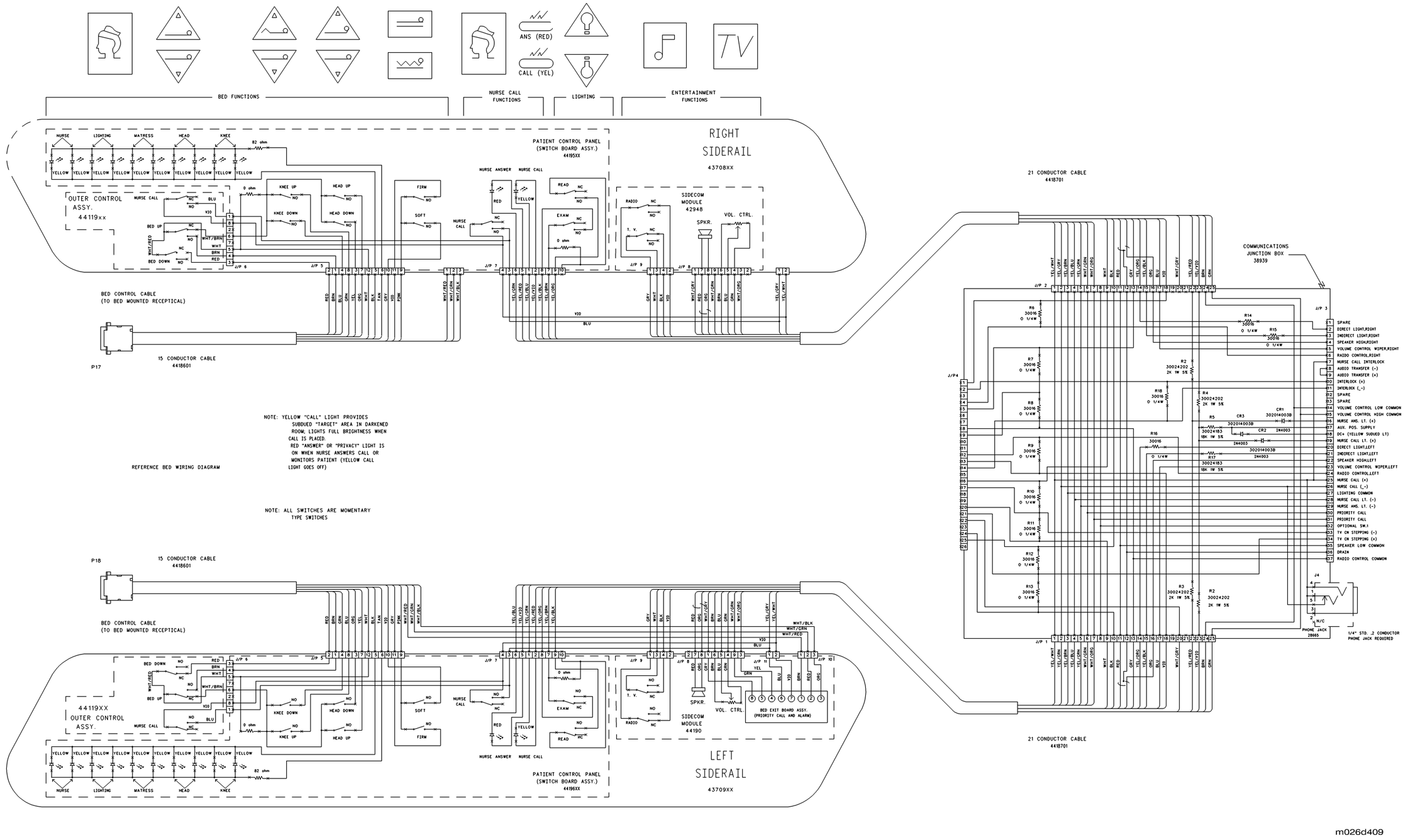
Schematic Wiring Diagram—Logic Control Board P/N 44158-01/02/04/05

Back to Chapter 3



Schematic Wiring Diagram—SideCom “A” Version Beds

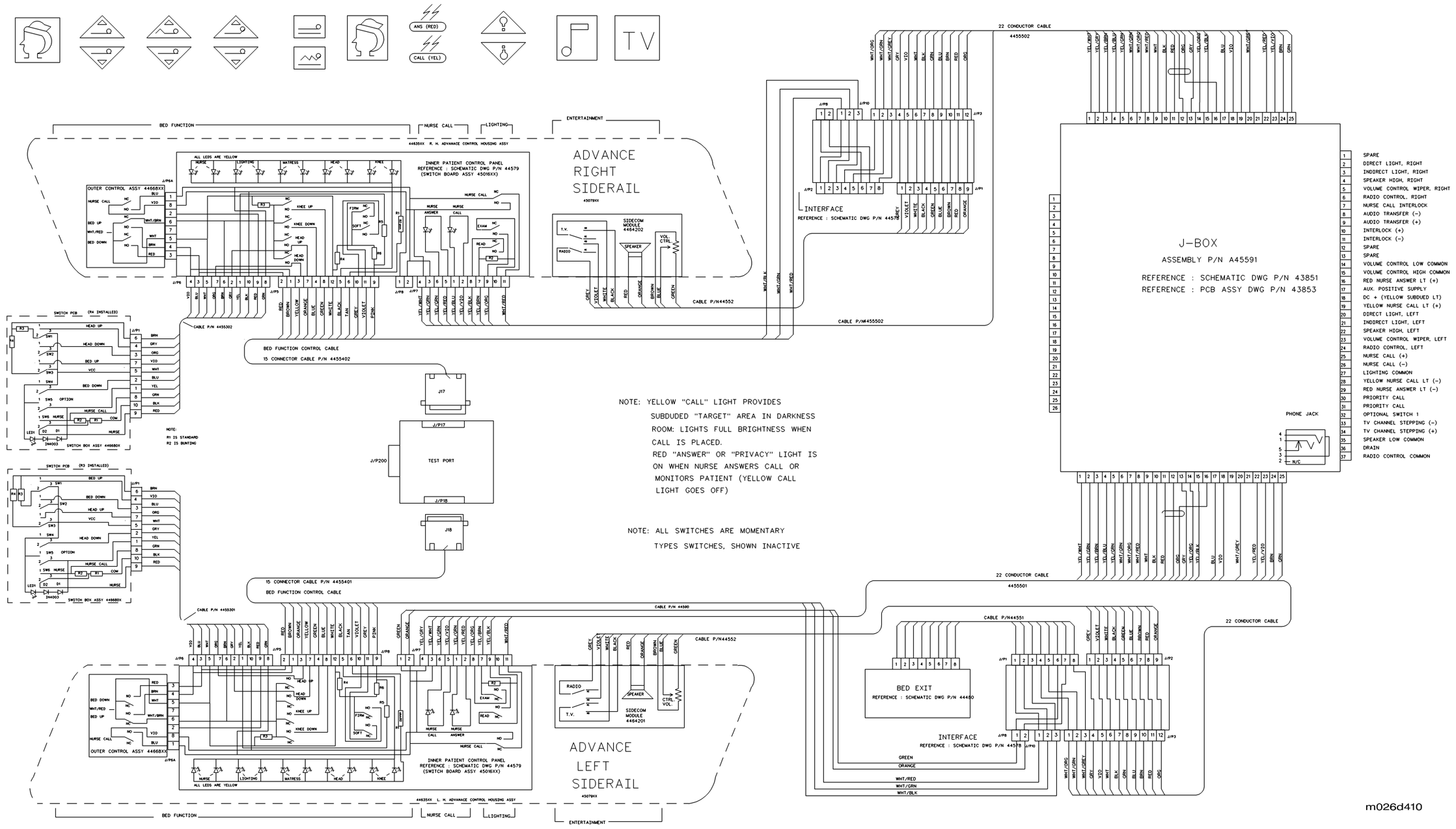
Back to Chapter 3



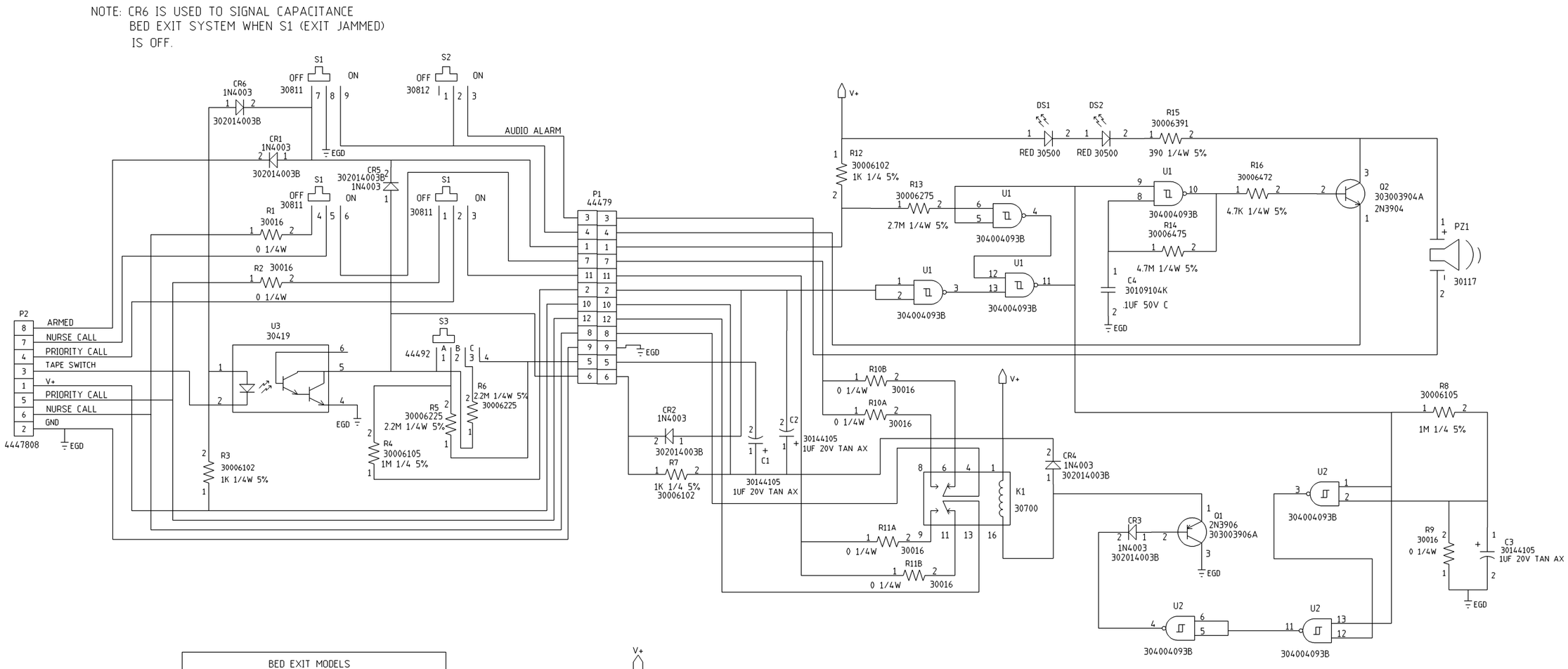
m026d409

Schematic Wiring Diagram—SideCom “B” & “C” Version Beds

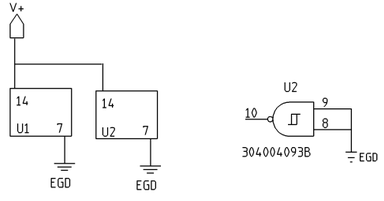
Back to Chapter 3



m026d410



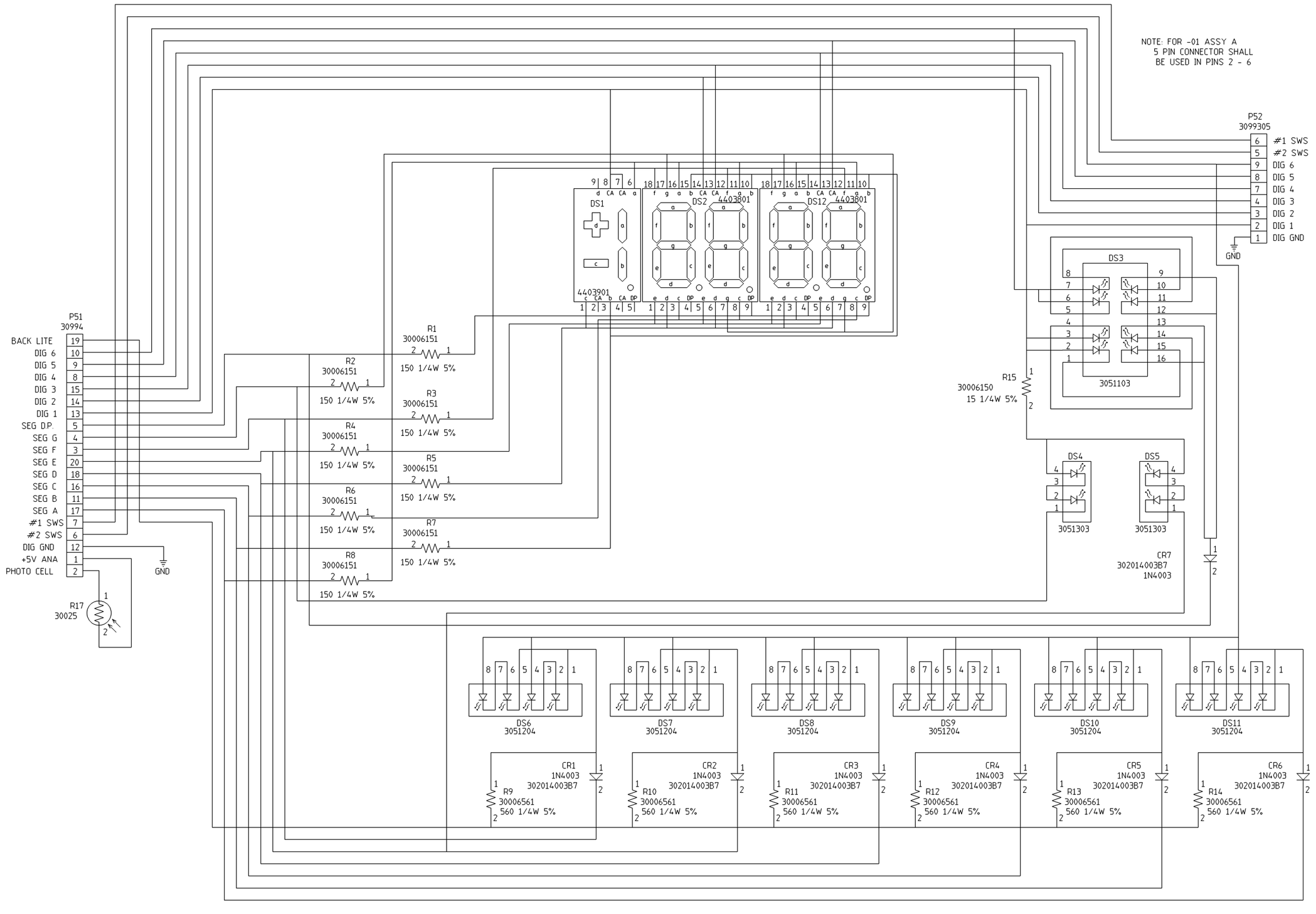
BED EXIT MODELS			
ACTION	STANDARD 01	BUNTING 02	MOMENTARY 03
DELETE	R10A, R11A R1, R2, C1	R10B,R11B,C1	R9,R10A,R11A,R1,R2,C1



m026d411

Schematic Wiring Diagram—Scale Display Board P/N 39452

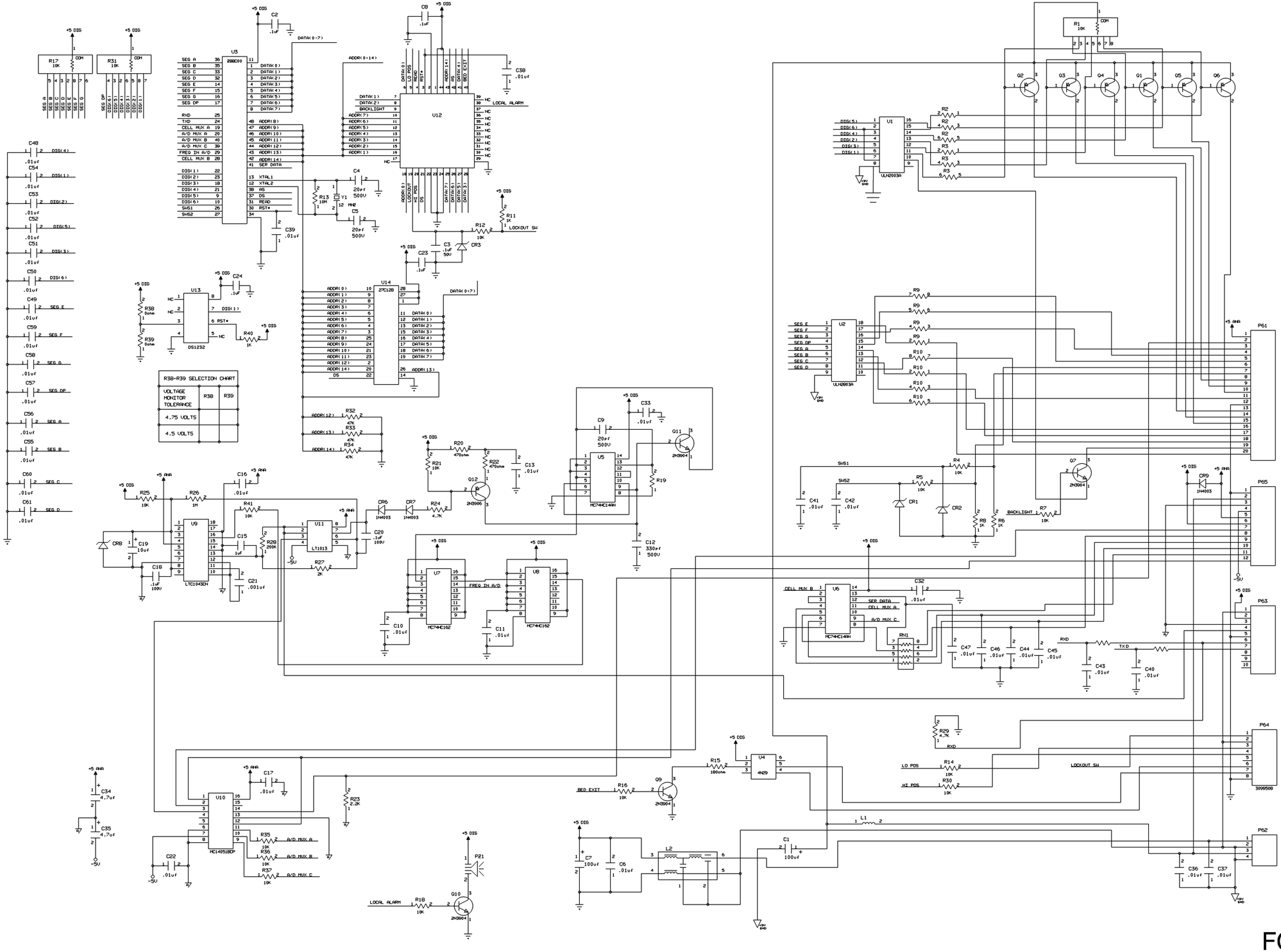
Back to Chapter 3



m026d412

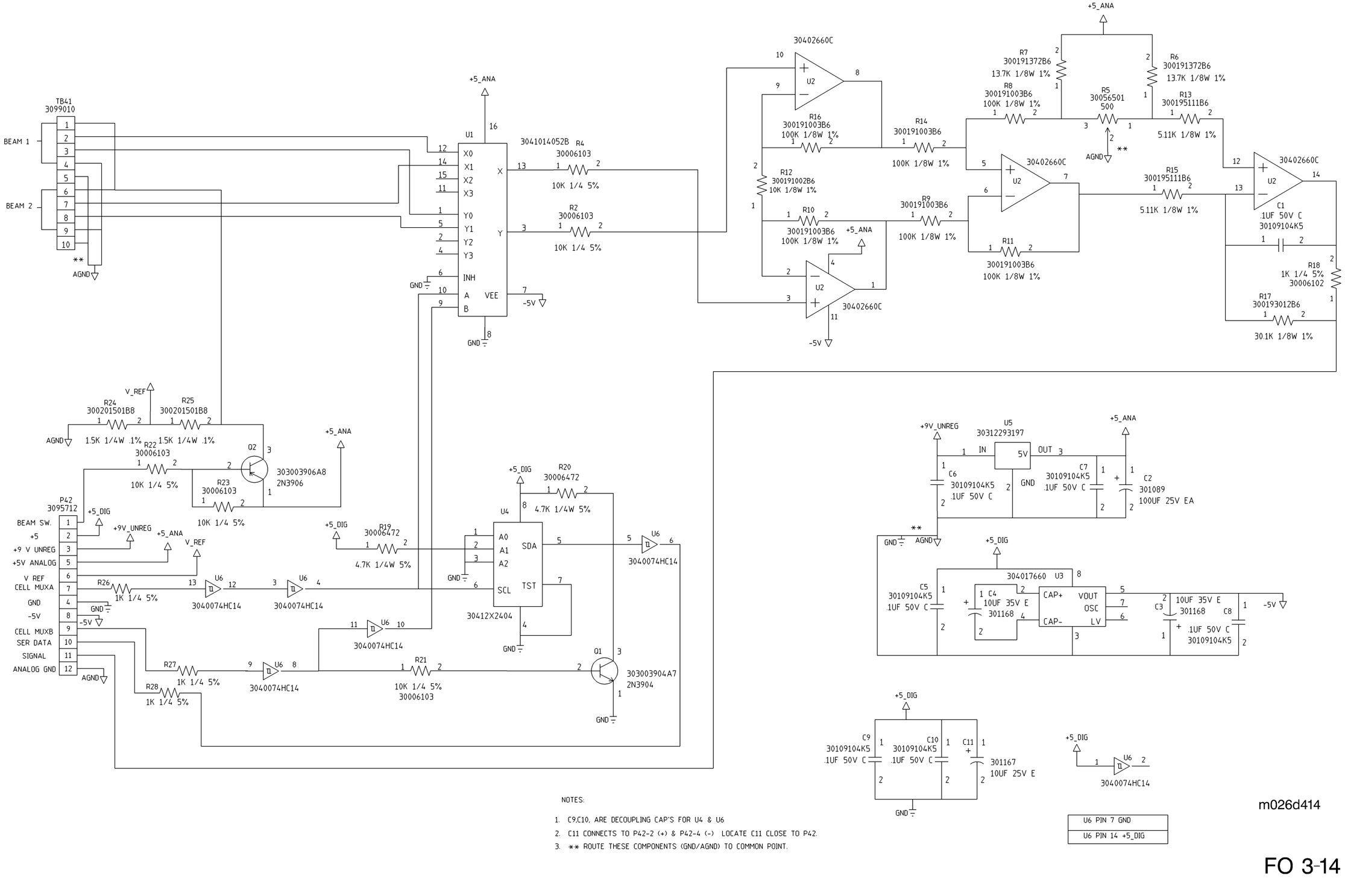
Schematic Wiring Diagram—Scale Micro Board P/N 38506

Back to Chapter 3



Schematic Wiring Diagram—Analog Board P/N 39369-01

Back to Chapter 3



NOTES:

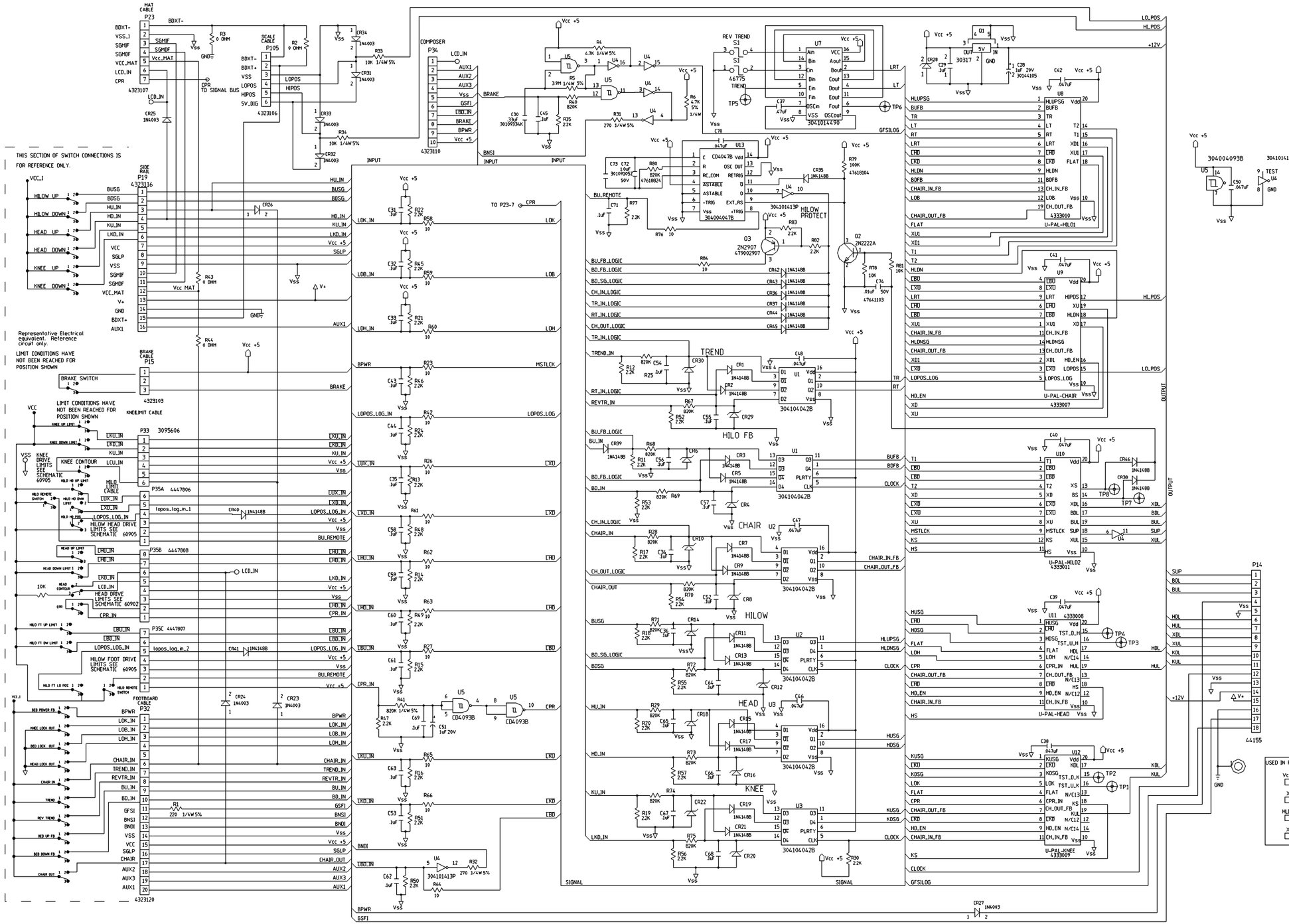
1. C9,C10, ARE DECOUPLING CAP'S FOR U4 & U6
2. C11 CONNECTS TO P42-2 (+) & P42-4 (-) LOCATE C11 CLOSE TO P42.
3. ** ROUTE THESE COMPONENTS (GND/AGND) TO COMMON POINT.

U6 PIN 7 GND
U6 PIN 14 +5_DIG

m026d414

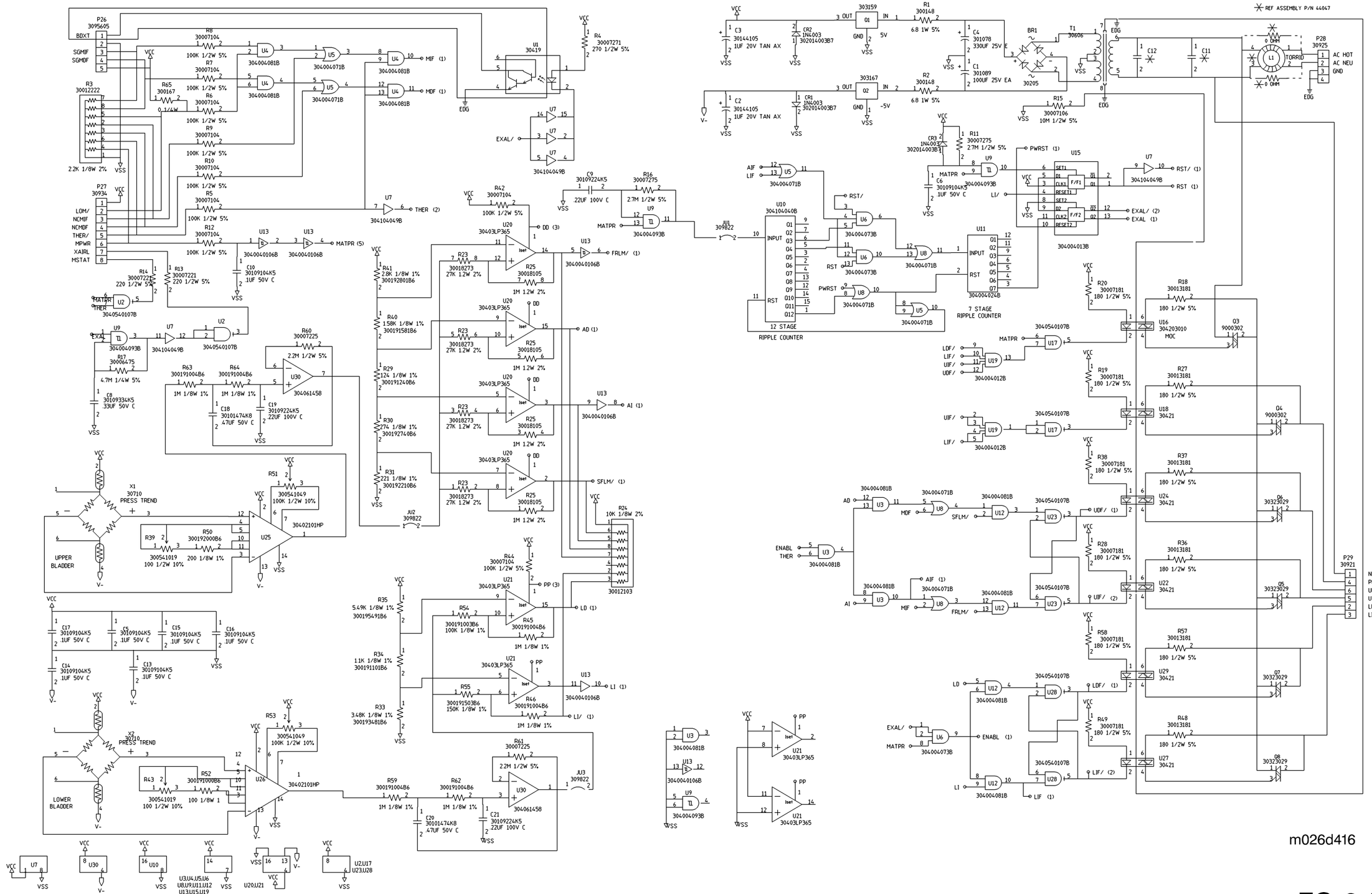
Schematic Wiring Diagram—PAL Logic Board P/N 61410

Back to Chapter 3



Schematic Wiring Diagram—DynamicAire Air System Board P/N 44047

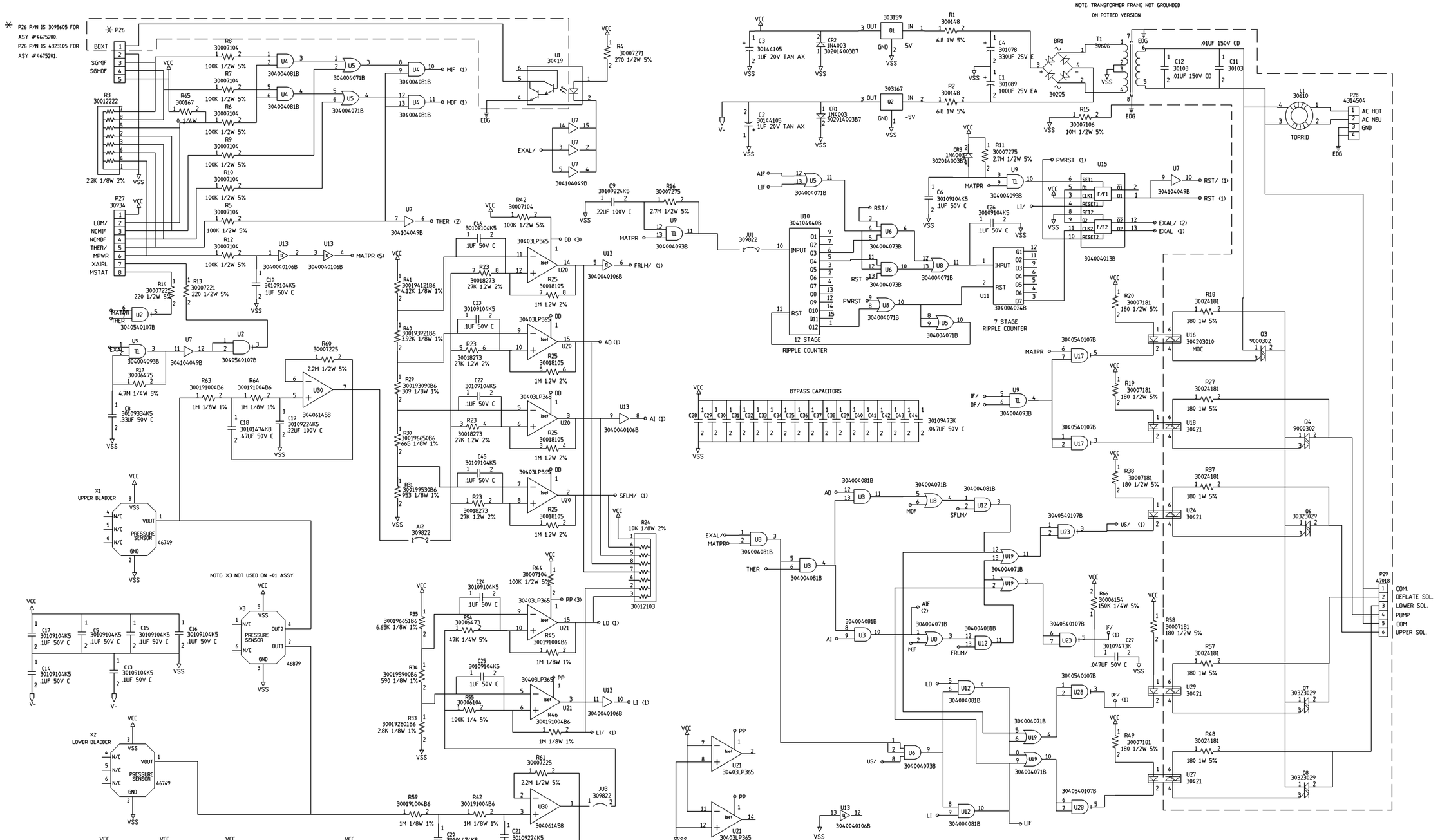
Back to Chapter 3



m026d416

Schematic Wiring Diagram—DynamicAire Air System Board P/N 46752

Back to Chapter 3



Schematic Wiring Diagram—ZoneAire Sensor Control Board P/N 44740

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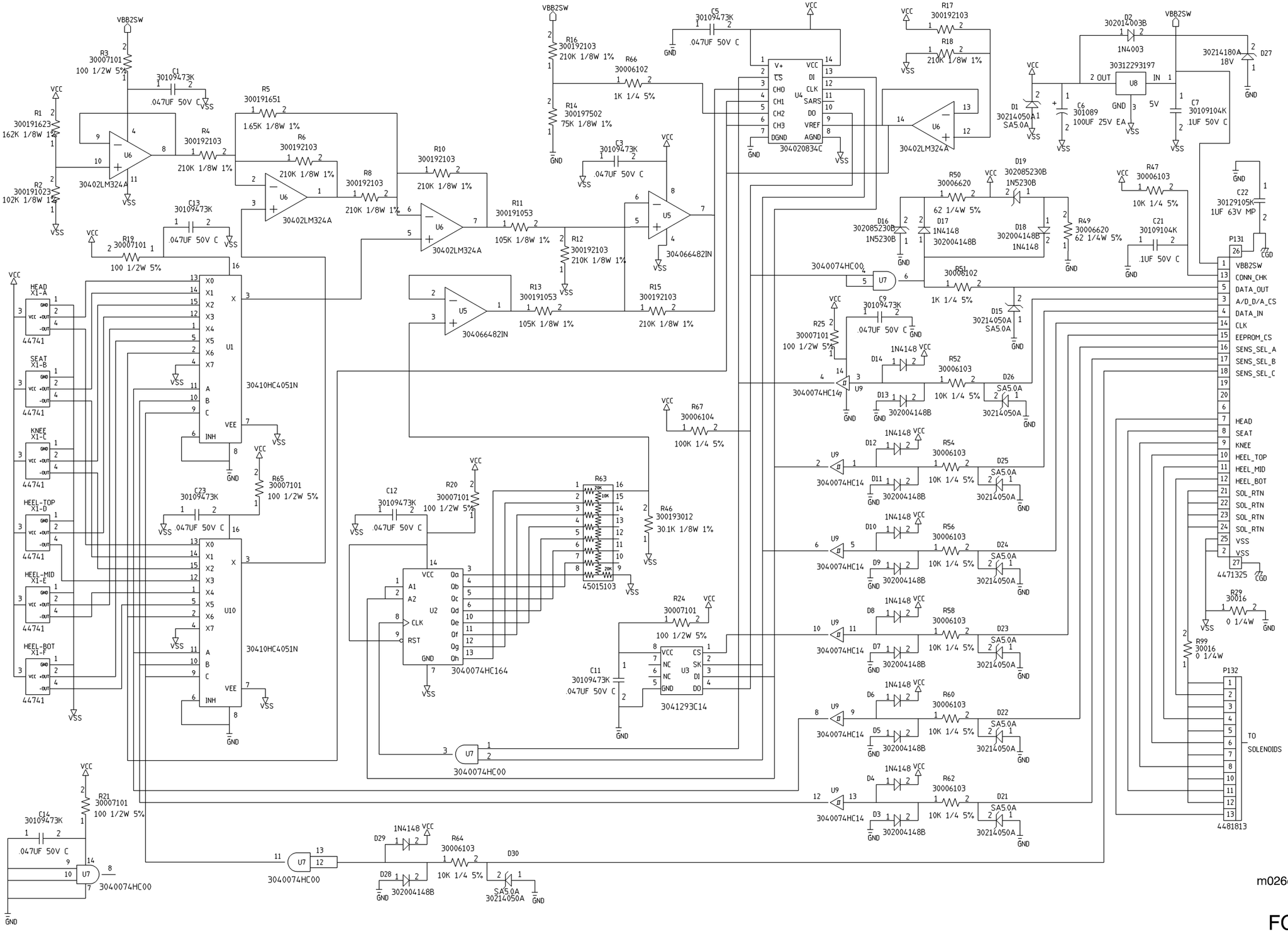
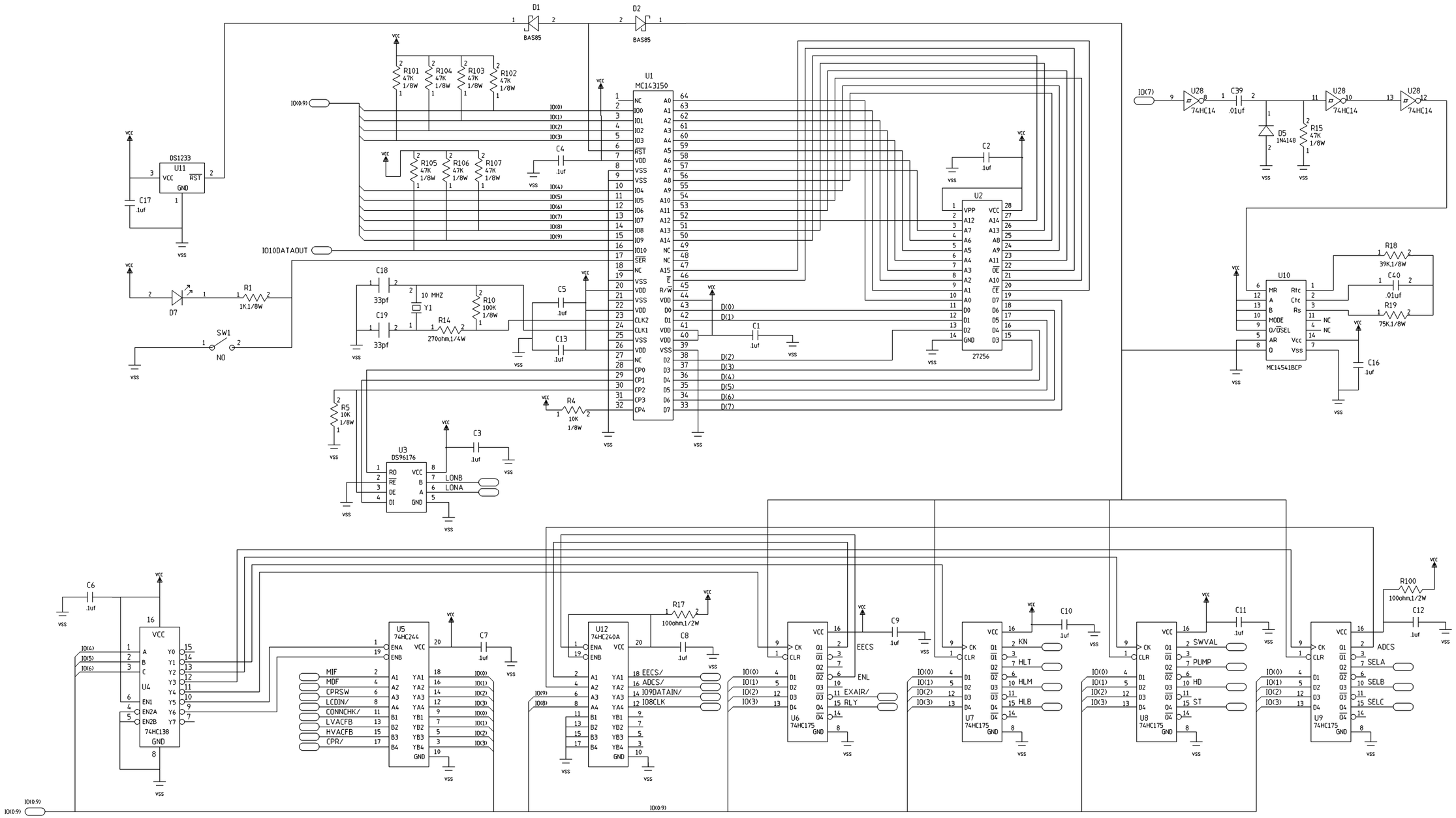


m026d418

Schematic Wiring Diagram—ZoneAire Air Control Board P/N 44760,45944 Sheet 1 of 2 To Sheet 2 Back to Chapter 3

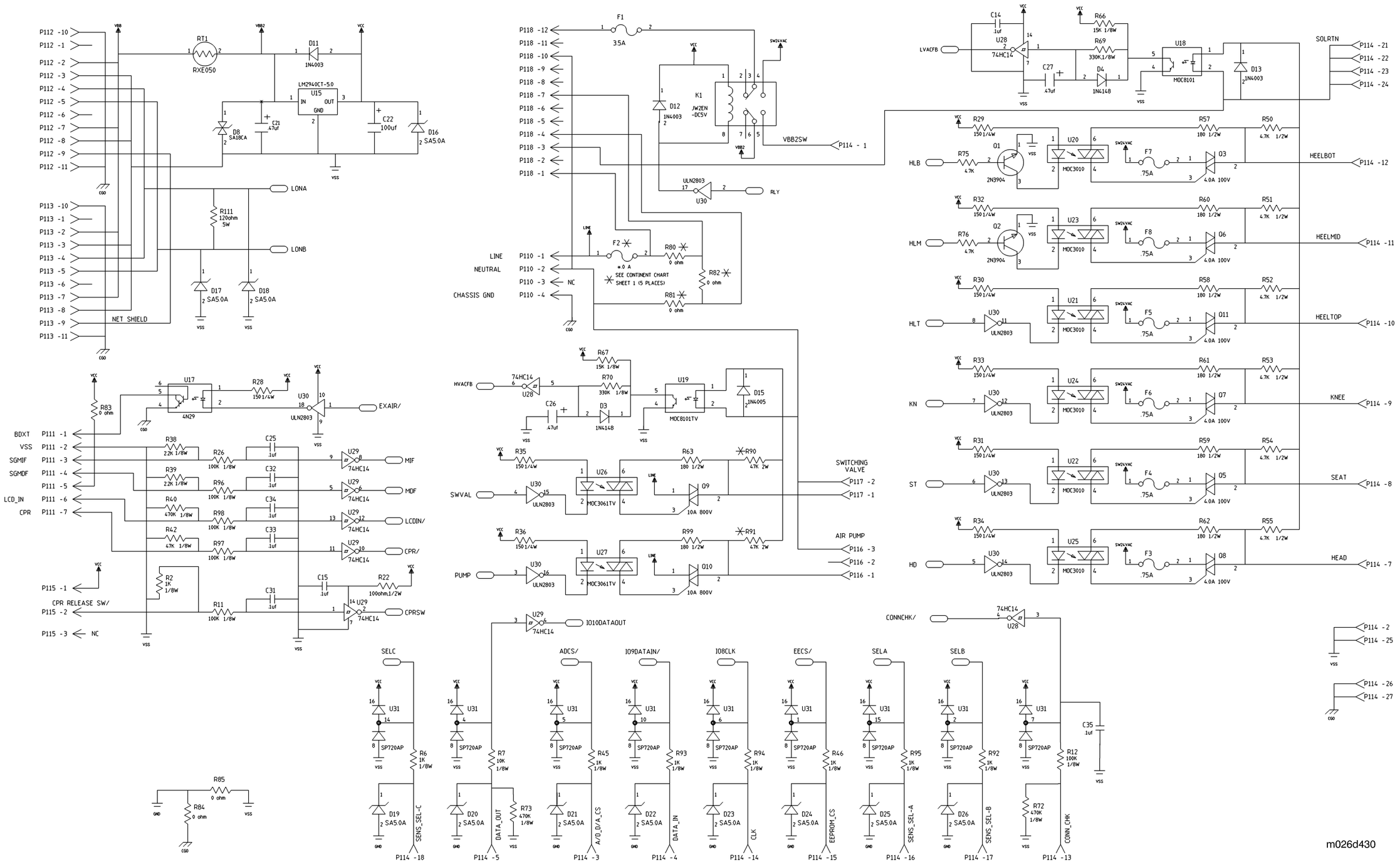


CONTINENT	STANDARD	NOMINAL INPUT VOLTAGE	TRANSFORMER CONFIGURATION RESISTORS	FUSE F2	R90 & R91
N.AMERICA	UL544 CSA 22.2-125	115VAC	R80 & R81 ONLY	H/R P/N 4471415 1.25A, 250V, UL, T	47Kohm, 2W, 5%, MO
ANY (NOT RELEASED)	UL544 CSA 22.2-125	230VAC	R82 ONLY	H/R P/N 4471411 .5A,250V, UL, T	91Kohm, 2W, 5%, MO
EUROPE (NOT RELEASED)	IEC601-1	230VAC	R82 ONLY	H/R P/N 4471512 .5A,250V, T, IEC (S)	91Kohm, 2W, 5%, MO
FRONT END TRANSFORMER APPLICATION	IEC601-1	115VAC	R80 & R81 ONLY	H/R P/N 4471515 1.25A, 250V, UL, T, IEC (S)	47Kohm, 2W, 5%, MO

NOTE: 1. FOR REV. B OR OLDER BEDS INSERT R83.
FOR REV. C OR NEWER BEDS DO NOT INSERT R83
2. R28, R84, AND U17 ARE NOT USED.

m026d419

Schematic Wiring Diagram—ZoneAire Air Control Board P/N 44760, 45944 Sheet 2 of 2 To Sheet 1 Back to Chapter 3



m026d430

Schematic Wiring Diagram—ZoneAire Membrane Interface Board P/N 44805

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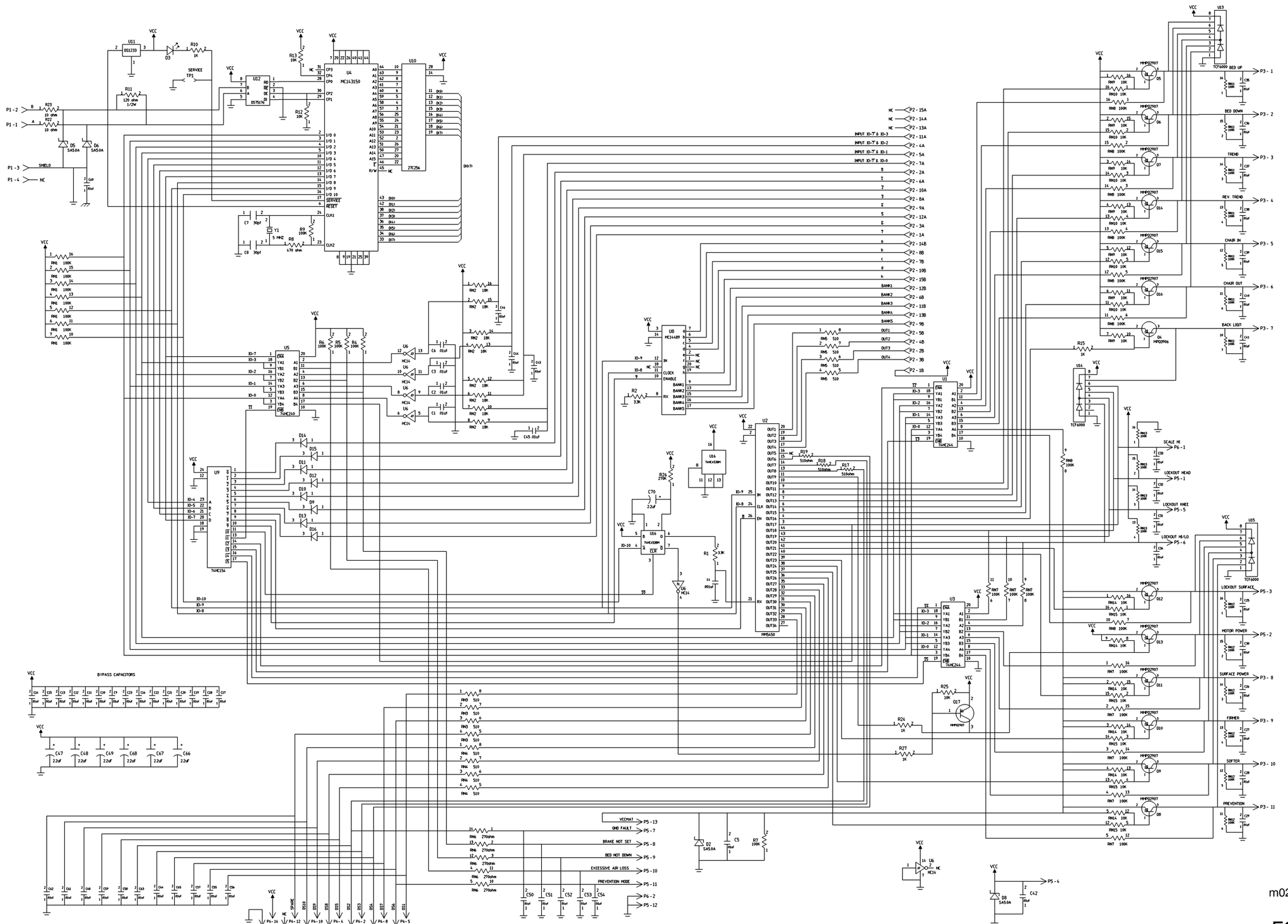
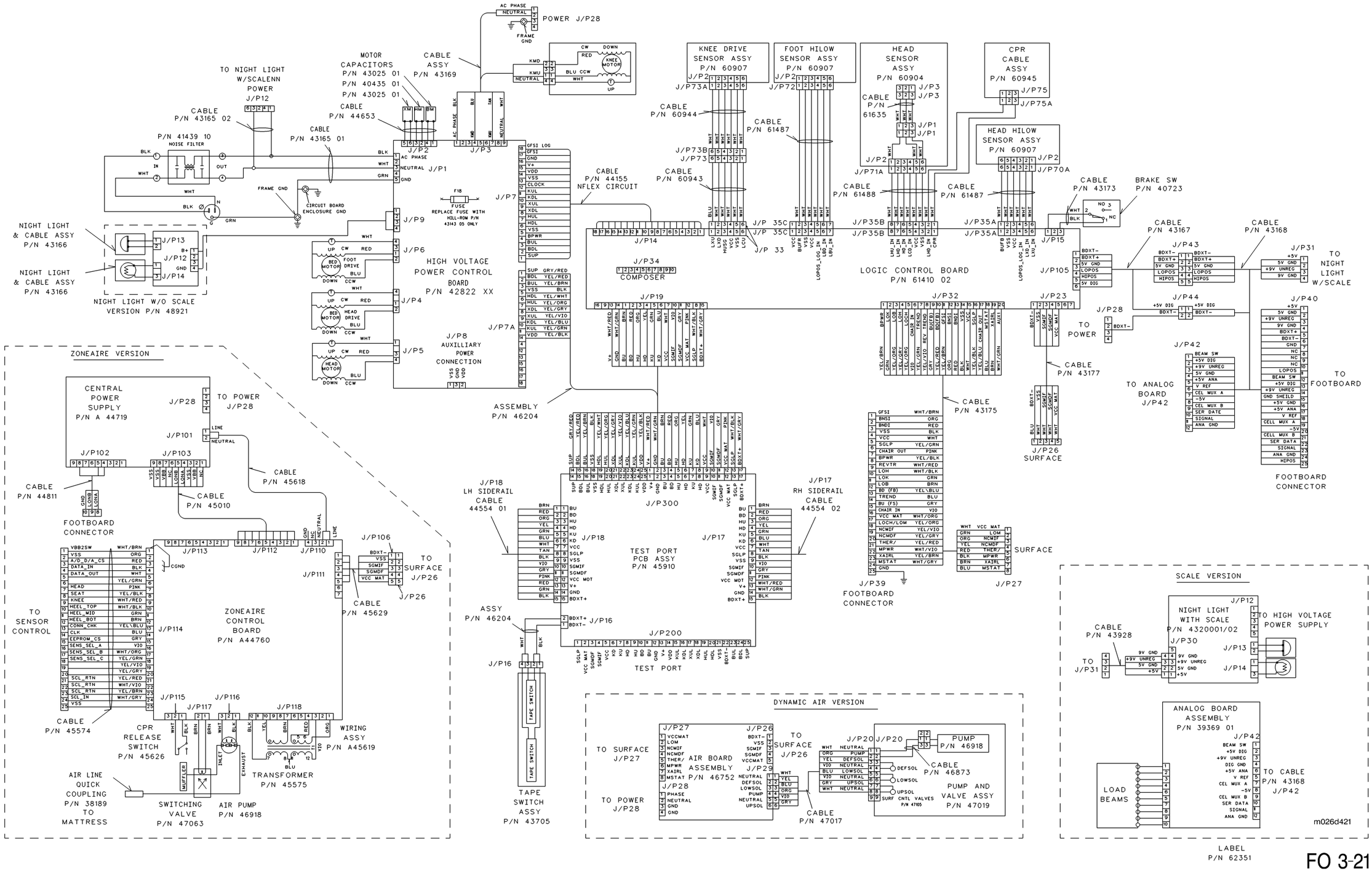

VCC
U11
DS1233
D3
R10
1K
SERVICE
TP1
R11
120 ohm
1/2W
U12
DS75176
R13
10K
R12
10K
U4
MC143150
U10
27C256
P1 - 2
P1 - 1
P1 - 3
P1 - 4
R23
10 ohm
R22
10 ohm
D5
SA50A
D6
SA50A
SHIELD
NC
C69
.01uf
C7
30pf
C8
30pf
Y1
5 MHZ
R9
100K
R8
470 ohm
SERVICE
RESET
CLK1
CLK2
D0-D7
U5
74HC240
U9
74HC154
U8
MC14489
U6
TMC4538M
U2
U1
74HC244
U3
74HC244
U7
74HC244
U4
74HC14
U6
MC14
U6
MC14
U6
M

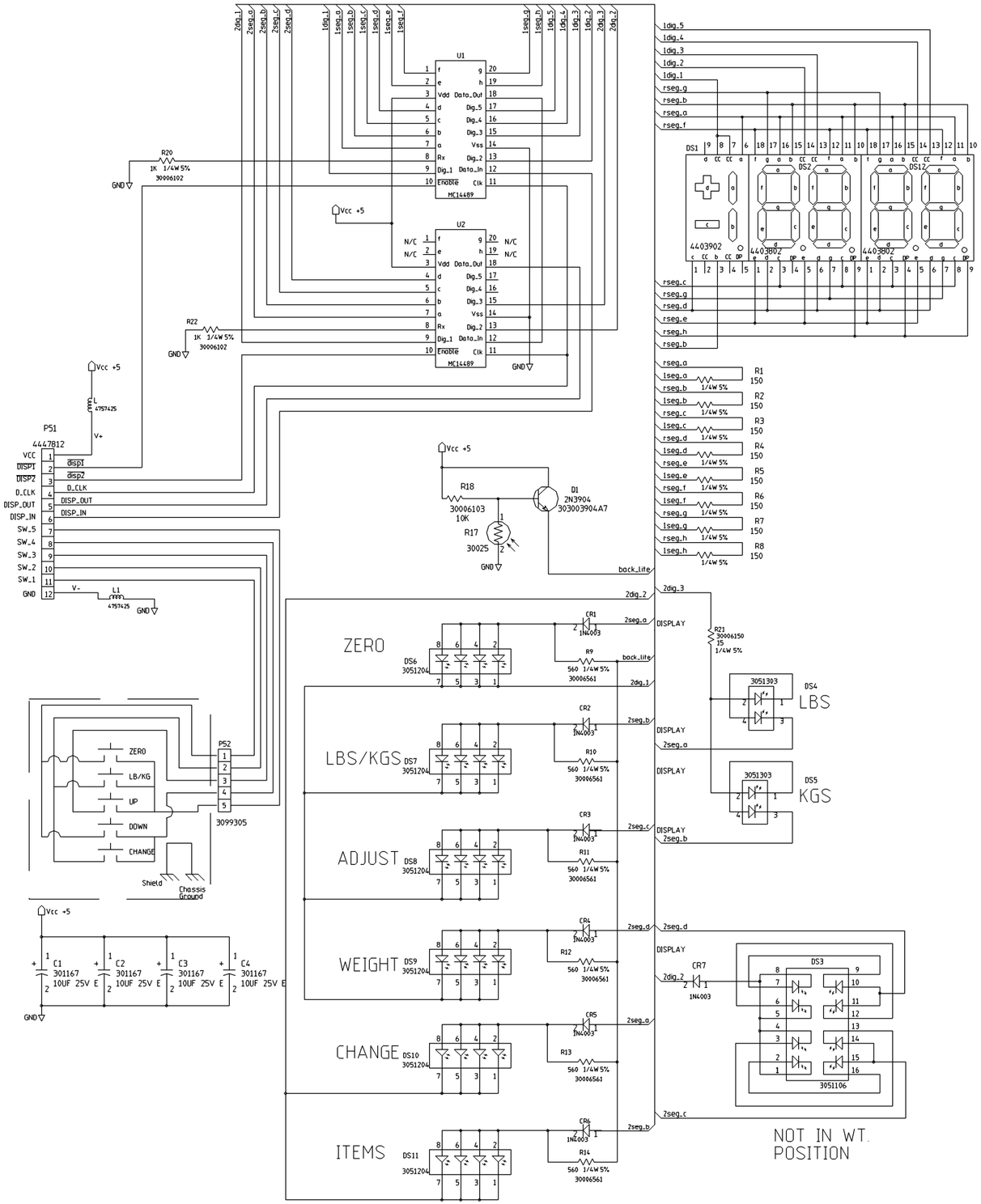
Schematic Wiring Diagram—115V “C” & “D” Version Beds

Back to Chapter 3



Schematic Wiring Diagram—Display Board “F” Version Beds P/N 49584

Back to Chapter 3



m026e514

Schematic Wiring Diagram—Scale Micro Board “F” Version Beds P/N 61205

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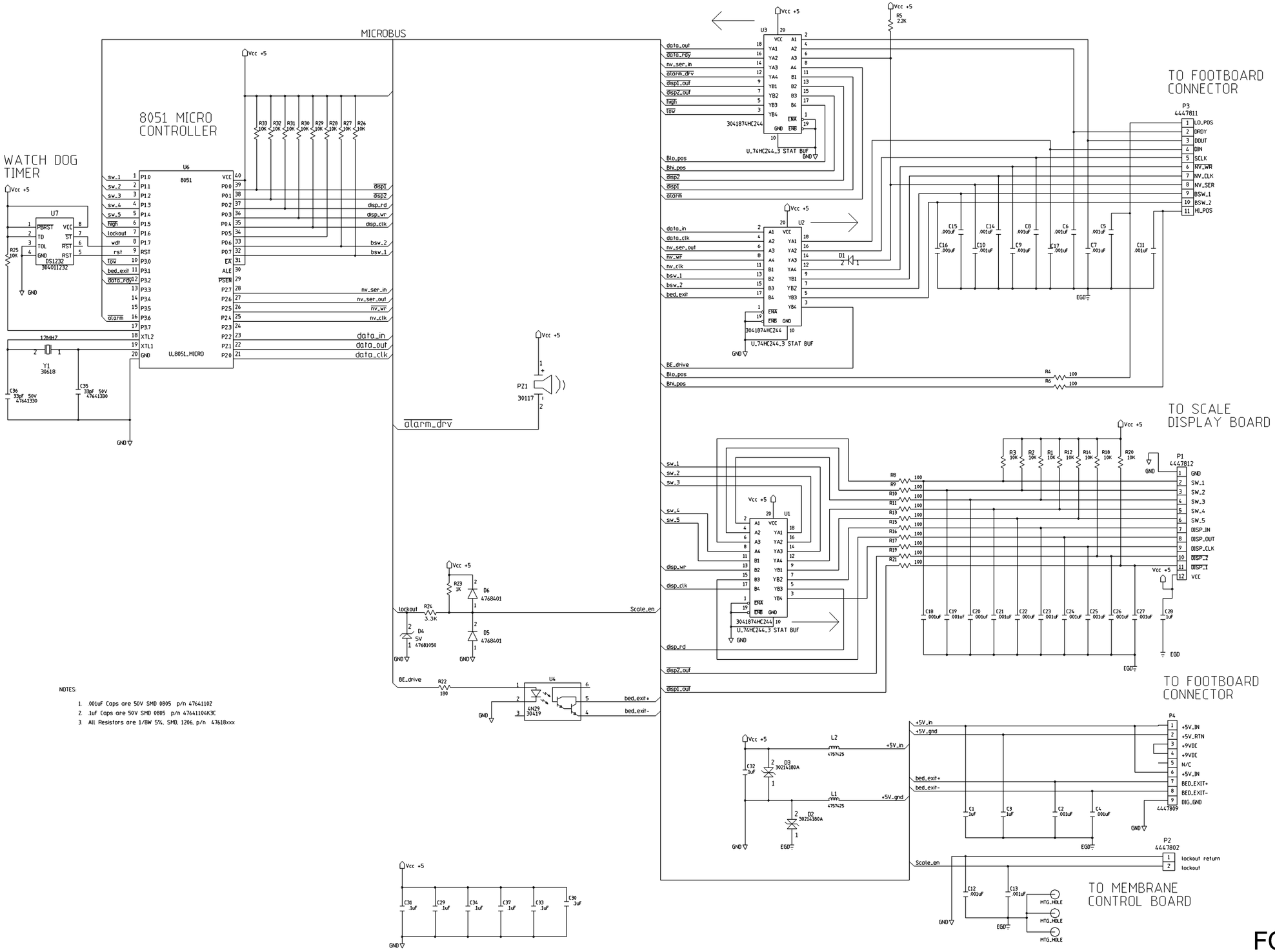

NOTES:

1. .001uF Caps are 50V SMD 0805 p/n 47641102
2. 1uF Caps are 50V SMD 0805 p/n 47641104K3C
3. All Resistors are 1/8W 5%, SMD, 1206, p/n 47618xxx

m026e513

Schematic Wiring Diagram—Analog Board “F” Version Beds P/N 49571-01

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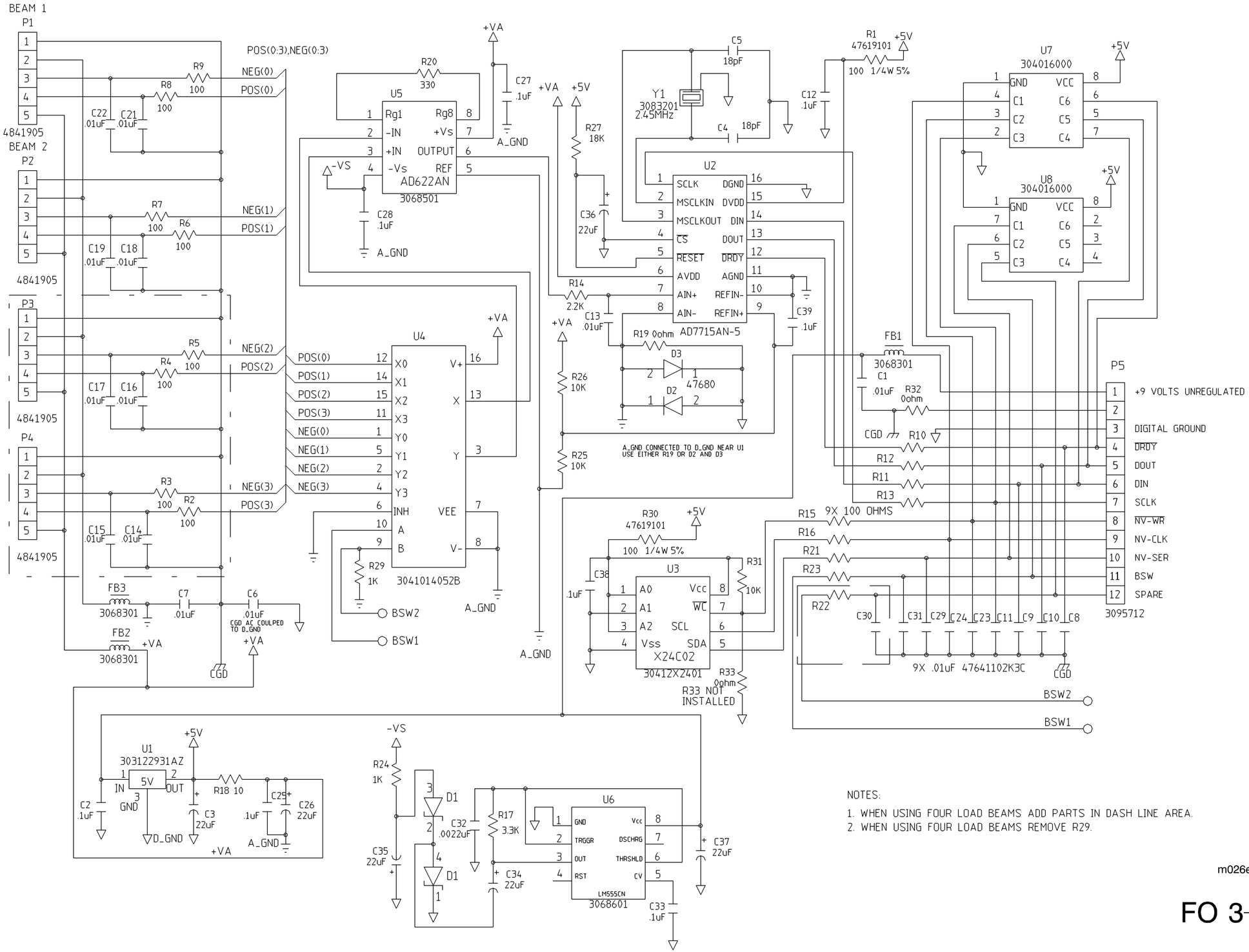


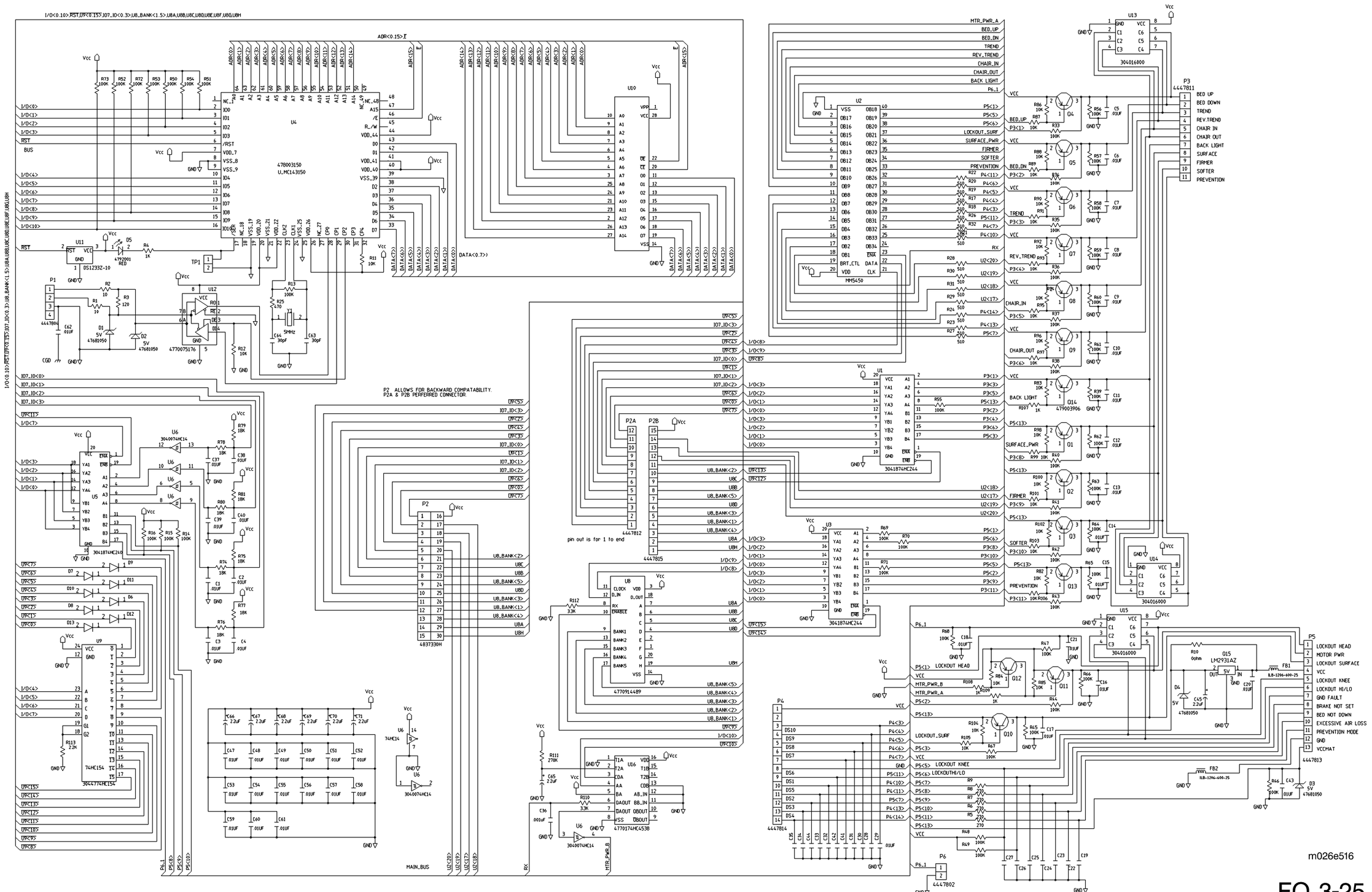
NOTES:

1. WHEN USING FOUR LOAD BEAMS ADD PARTS IN DASH LINE AREA.
2. WHEN USING FOUR LOAD BEAMS REMOVE R29.

m026e515

Schematic Wiring Diagram—ZoneAire Sleep Surface Membrane Interface Board “F” Version Bed P/N 62738

Back to Chapter 3



Schematic Wiring Diagram—"F" Version Beds

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